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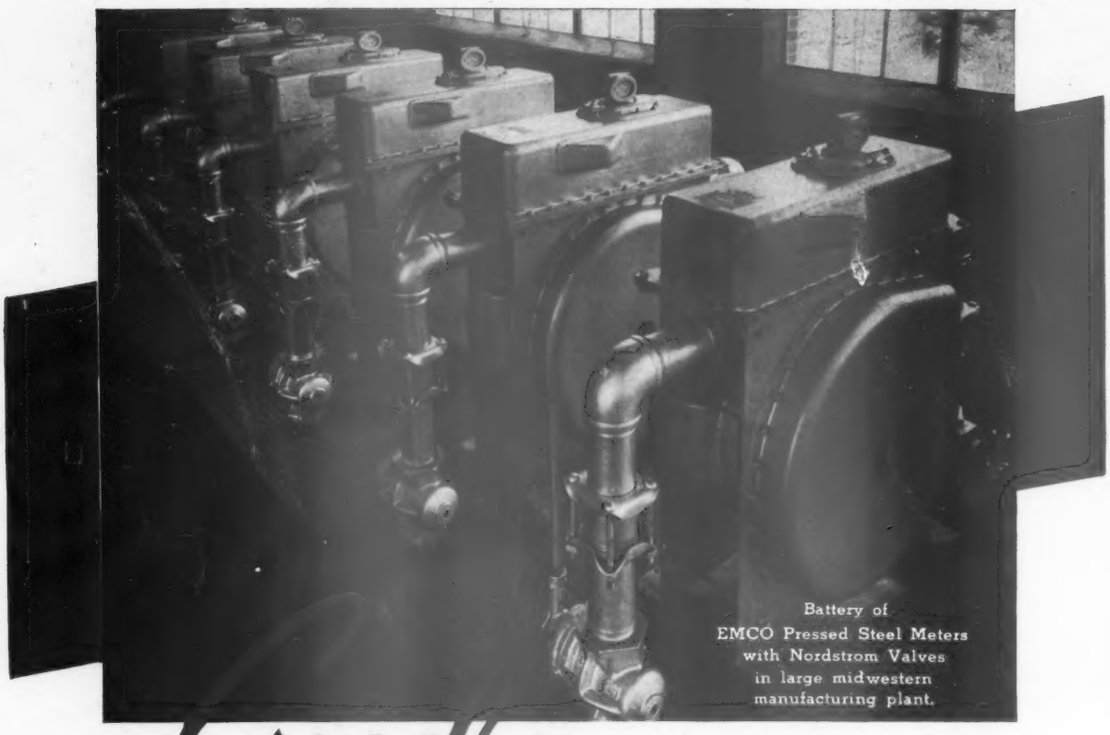

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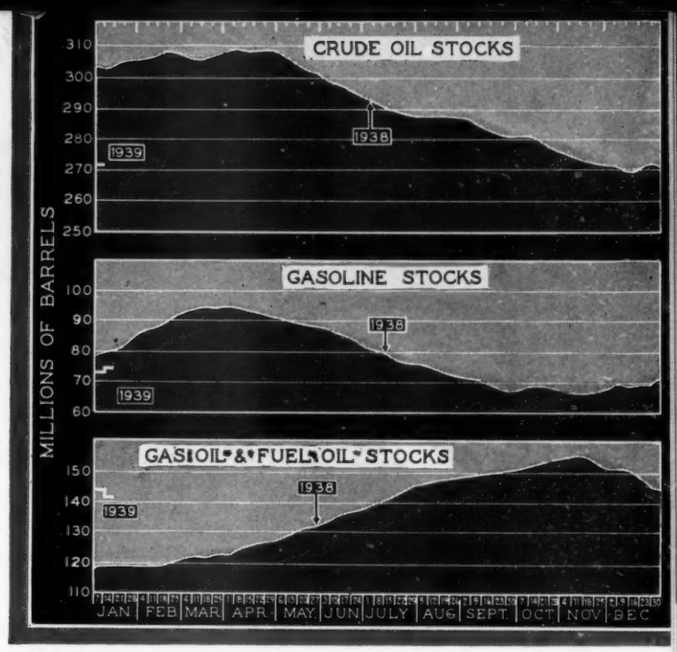
Trends

Higher Oil Output in Louisiana and Illinois Fields Brings Threats



INCREASES in several states were responsible for the gain of 40,653 bbls. daily in crude oil production last week including Oklahoma, 18,275 bbls., Texas 17,201, California 5,900, Kansas 15,150, Louisiana 4,500 and Illinois 3,000. As shown in the accompanying table, Texas, Oklahoma and Kansas were within their state allowables and also the Bureau of Mines estimated demands, despite the increases, while Louisiana and Illinois operations were substantially in excess of recommendations.

CRUDE PRODUCTION *3,247,045 barrels daily average — up 40,653. One year ago 3,478,886 barrels.*

CRUDE STOCKS *272,325,000 barrels as of January 7—down 699,000. One year ago 303,078,000 barrels.*

GASOLINE STOCKS *73,752,000 barrels as of January 14 — up 934,000. One year ago 81,002,000 barrels.*

GAS AND FUEL OIL STOCKS *142,460,000 barrels as of January 14—down 873,000. One year ago 119,433,000 barrels.*

REFINERY RUNS *3,260,000 barrels daily week ending January 14 — up 90,000. One year ago 3,158,000 barrels.*

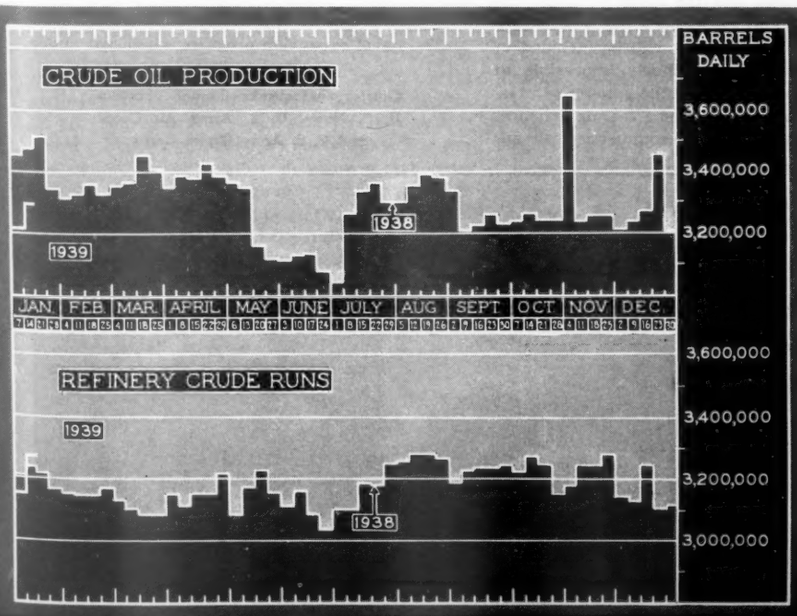
The situations summarized in foregoing data are receiving wide attention, with the feeling that they hold the key to price trends over the next few weeks. Threats of lifting the Sunday and Saturday shutdowns in Texas are heard if Louisiana continues to produce in excess of what is considered that state's fair share of the market over the next 90 days. Texas interests claim that Louisiana, in pursuing this policy, is taking markets which for years were served with crude or refinery products from the Lone Star state.

The relationship of Oklahoma and Kansas to the steadily increasing production of Illinois is similar. Practically every barrel of production added in Illinois has to be offset by reductions in Oklahoma or Kansas. One Oklahoma pipe line company serving Middle West refiners has lost more than 50 per cent of its markets to Illinois and reports indicate that further reductions are in prospect. It is no secret that other middle-western refiners will make provision to obtain Illinois crude, further reducing purchases in Oklahoma and Kansas, if the production of Illinois continues to expand with an increasing quantity selling under posted prices.

The contention is that refiners selling in the Middle West will have no choice but to join the scramble for cheap Illinois crude supplies. The hope is that the state will adopt a conservation act, the enforcement of which will result in a substantial decline in the output of several areas now flowing on a basis which shortly will end the flush producing periods.

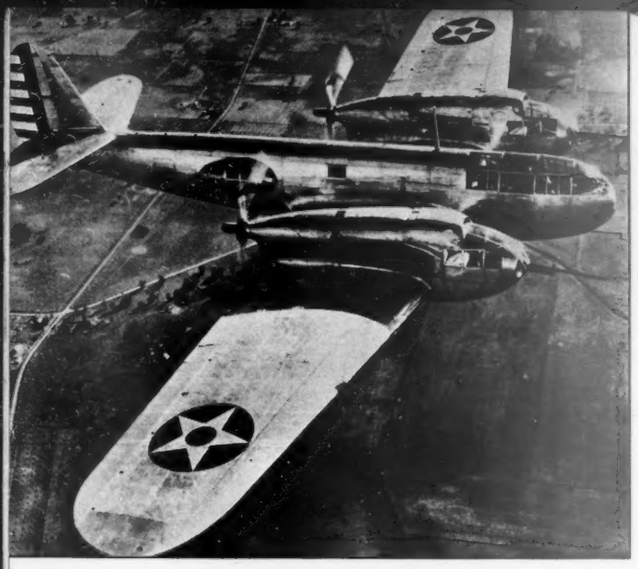
The old producing pools of Southeast Illinois are in much the same position as Mid-Continent fields. Their output has been reduced approximately 40 per cent due to the curtailment of pipe line purchases made effective the first of the month by the principal buyer.

The precipitate decline in Mid-Continent natural gasolines has been outstanding in markets for finished products, ending a period in which they were the strongest product. There are no indications of sustained improvement in refinery gasolines although the statistical situation generally is better than it was in January last year. Price shading is reported at several points in tankcar and tank-wagon sales of furnace oils and other oils consumed as fuels. The demand for both Pennsylvania Grade and western lubricating oils has improved.



DAILY AVERAGE PRODUCTION FOR WEEK

	Jan. 14, 1939	Bur. Mines Jan. est. of demand	Jan. state allowables	Jan. 7, 1939
Oklahoma City	95,600	.....	.....	74,300
Fitts	31,475	.....	.....	33,100
Remainder of state	293,875	.....	.....	295,275
Total Oklahoma	420,950	499,700	428,000	402,675
East Texas	372,000	.....	.....	371,950
West Texas	203,600	.....	.....	203,849
North Central Texas	109,695	.....	.....	109,349
Texas Panhandle	55,850	.....	.....	69,950
East Central Texas	91,350	.....	.....	95,146
Gulf Coast Texas	340,100	.....	.....	339,299
Southwest Texas	102,695	.....	.....	102,948
Total Texas	1,275,290	1,332,900	1,319,542	1,292,491
North Louisiana	74,460	.....	.....	71,720
Gulf Coast Louisiana	192,000	.....	.....	190,200
Total Louisiana	266,460	241,900	251,340	261,920
California	628,400	588,400	600,000	622,500
Kansas	152,300	153,900	153,900	137,150
Arkansas	50,945	49,000	.....	50,565
Eastern Fields	94,200	92,900	.....	91,750
Illinois	139,794	86,100	.....	136,784
Michigan	51,816	47,400	.....	45,887
New Mexico	100,740	95,800	95,800	98,160
Rocky Mountain area	66,150	82,600	.....	66,510
Total United States	3,247,045	3,270,600	.....	3,206,392



New multi-seat fighter being built for the Army

Defense Plan High Octane

By HENRY D. RALPH

WASHINGTON, D. C., Jan. 16.—The increased national defense program recommended to Congress by President Roosevelt last week will not mean any immediate or spectacular increase in the requirements of the Army and Navy for petroleum products.

While it is true that the old saying that the Army fights on its stomach has been modernized to mean that the Army and Navy fight with gasoline and fuel oil, it does not follow that an increase in armament and fighting equipment will require an immediate sizeable increase in oil purchases. For several years there has been a gradual and rather steady increase in the gasoline and oil consumption of the Army and Navy and this trend would have continued without the rearmament program. The new program simply means that the upward trend of oil requirements will be accentuated in future years, for it will take from one to five years to get into operation the new warships and aircraft now under construction or recommended for authorization.

Close estimates on petroleum products requirements of the Army and Navy during the current or the next fiscal years are impossible to obtain because of the understandable reluctance of Army and Navy officials to reveal their operating plans. These officers, however, agree that their fuel needs will not jump appreciably during 1939 and probably not spectacularly during 1940 unless there is a war or other unforeseen contingency requiring much greater maneuvering than is now contemplated. All available funds are being used for the acquisition of new fighting equipment with the result that other activities are being kept to a minimum. For example, the Navy's budget for the 1940 fiscal year carries a smaller amount for operation of the fleet than during the current fiscal year notwithstanding that several large new ships are being added to the fleet. The naval war games in progress in the Carribean are on about the same scale as in other recent years and the 1940 war games will probably be little more extensive so that the Navy's fuel bill will not be increased on this account in spite of the increases in the size of the fleet.

The major recommendation in President Roosevelt's defense message is for $300,000,000 for the purchase of additional airplanes for the Navy which is estimated to provide a minimum increase of 3,000 planes. Of this amount $50,000,000 would be made available immediately, but, even so, it will require a couple of years at least to complete this program, since many of the new planes will be of the large type which cannot be put into mass production in short order.

Increased Air Force

At present the Army has approximately 1,200 planes and 1,100 more on order, which will be delivered during the next few months, so that when the new program is completed the Army force will be between four and five times its present size.

Naturally it will require much more gasoline to fly this augmented air force, particularly if most of the new planes are of the large, multi-engined type, but this requirement will not show up in gasoline purchases for a year or two. For example, the budget of the Army Air Corps for the fiscal year ending June 30, 1940, is based on 684,000 flying hours. Figures on the flying hours during the last couple of years were not readily available at the War Department, but during 1935 and 1936 they were approximately 500,000 flying hours each year. The amount of gasoline used by the various types of planes in the Air Corps is considered a military secret but a rough average is a consumption of 40 gallons of gasoline per hour per engine. Since there is a wide variance between the hourly consumption of small fighting and scouting planes and the huge bombers and flying fortresses, and since the Army has not announced what types of planes will be included in the new program, it is obviously impossible to make a very close estimate of the amount of aviation gasoline the Army will need a year or so hence.

The president has also recommended an additional appropriation of $21,000,000 "for additional Navy airplanes and air material tests," but Navy officials decline to divulge the number or types of planes they contemplate purchasing. The only information available is that the Navy now has 1,818 planes, including approximately 400 which are obsolete or nearly so, plus 180 in the Naval Reserve and 154 in the Marine Corps. The only fragment of information in the annual report of the chief of the Bureau of Aeronautics of the Navy is that last year flying hours increased 19 per cent, but officials will not reveal the total number of flying hours nor the gasoline consumed by the naval air force. The Army Air Corps is now using 100-octane gasoline almost exclusively, but the Navy is still considerably short of this goal, largely because the Navy flight commanders figure they can get more flying hours on their operating budgets by using lower octane gasoline even though their motors may have to be overhauled more frequently. However, all the new naval aircraft will be equipped with motors designed to use 100-octane gasoline and the Navy's purchase of this type of fuel may be expected to increase considerably during the next couple of years.

The 1940 budget estimate for the Army Air Corps includes an item of $7,048,700 for the procurement of fuel and oil for operation of aircraft as compared with estimated expenditures for this purpose during the current fiscal year of $6,366,912, and actual expenditures of $4,178,797 during the 1938 fiscal year. The Navy Bureau of Aeronautics does not itemize its appropriations and its budget calls for $18,288,200 during 1940 for all expenses connected with "maintenance and operation of the fleet" as compared with $13,373,700 during the current or 1939 fiscal year and $12,832,000 actual expenditures in 1938. One officer suggested the Navy would increase its purchase of aviation gasoline some 30 per cent next year.

The naval expansion program which got under

Official photographs through courtesy U. S. Navy, U. S. Army Air Corps and U. S. Army Signal Corps

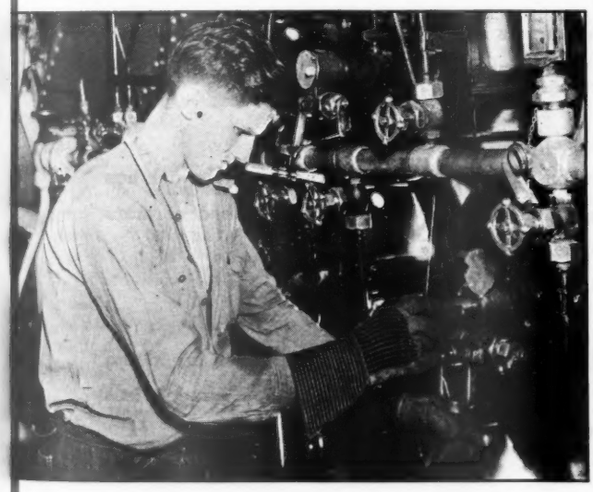
U.S.S. Brazos, Navy tanker

Will Require Gasoline

Armored cars on inspection at mechanized cavalry maneuvers, Fort Riley, Kansas

way last year will ultimately increase the size of the fleet very materially and will call for commensurate increases in fuel oil requirements, but the amount of this increase is conditioned as much on the scheduling of maneuvering as on the number of ships in the fleet. During the last few months two new airplane carriers and three new cruisers have been commissioned and have joined the fleet, but the Navy's budget provides no increase in operating expenses for the current year.

The Navy now has in various stages of construction another aircraft carrier, seven more cruisers, six battleships, 42 destroyers, and 19 submarines. As these vessels are put into service some of the older ships will be decommissioned and kept in reserve, but even so the Navy will require continually increasing supplies of fuel oil since the new ships have much greater horsepower and speed than the vessels being replaced and consequently their fuel consumption is larger. The naval expansion program already authorized is estimated to increase the fleet by between 20 and 25 per cent in both tonnage and horsepower, and naval officers say it is a safe guess this will mean that when the construction program is completed the Navy will require increased amounts of fuel oil in approximately the same percentage, based on the same amount of maneuvering as is being done at present. Except for half a dozen harbor tugs and other minor craft of obsolete design, the Navy vessels all are oil burners, although the Navy still uses considerable coal at many of its shore stations.



Replacing burner in boiler, U.S.S. Indianapolis

One interesting fact about the Navy's fuel requirements is that its use of Diesel oil has been increasing between 30 and 50 per cent every year and probably will continue to do so. Part of this is due to the building of additional and larger submarines with much higher surface speeds, but a large part is also due to the increase of Diesel motors in the power boats, of which the Navy has a large number of all types, and for powering auxiliary machinery on the new cruisers and certain other types of vessels. To a certain extent this increased use of Diesel oil displaces gasoline and fuel oil.

Naval Needs

The Navy is reluctant to disclose information regarding its fuel requirements, but the last annual report of the Bureau of Supplies and Accounts states that Navy contracts for the fiscal year 1938 called for approximately 11,000,000 bbls. of fuel oil, 825,000 bbls. of Diesel oil, 19,000,000 gallons of aviation gasoline, and 16,000,000 gallons of motor gasoline. The budget for the fiscal year 1940 carries $5,904,525 for the purchase of fuel oil for vessels of the fleet, as compared with estimated expenditures during the current fiscal year of $6,579,200 and actual expenditures last year of $7,113,171. This decrease in dollars, however, does not necessarily mean a decrease in barrels, as the price of fuel oil may be estimated by the purchasing officers at a lower figure next year. In making the appropriation for the current fiscal year last January, the House committee on appropriations declared that it would allow for the consumption of approximately 8,000,000 bbls. of fuel oil for the use of the fleet and gave the following figures of actual consumption during recent years: 1934, 5,608,089 bbls.; 1935, 7,040,657 bbls.; 1936, 6,538,853 bbls.; 1937, 6.833,950 bbls. Of course both the Army and the Navy use large quantities of petroleum products for purposes other than operating airplanes and ships but nothing in present defense plans calls for any great increase in these requirements during the next year or two. The Army is steadily motorizing as much of its equipment as possible, and while the horse and the Army mule may never be discarded, the Army truck is being used more and more. Likewise the program of construction tanks and motorized field artillery will eventually increase the Army's gasoline requirements.

Mechanized Cavalry

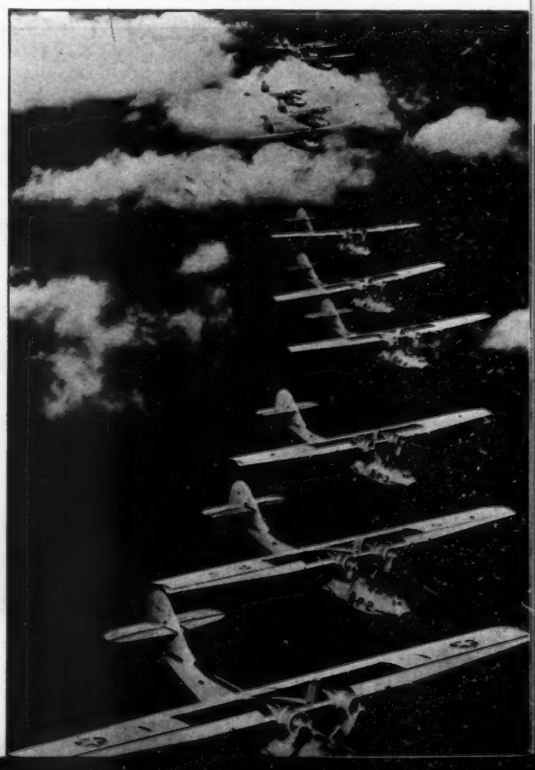
Most interesting in this motorization program is the creation of a mechanized cavalry division producing what to the layman is the anomalous situation of cavalry without horses. While this experimental division has been pronounced a success there are no present plans for motorizing other divisions. During the current fiscal year this motorized cavalry division plans to consume 541,831 gallons of gasoline, 18,086 gallons of lubricating oil, and 10,491 pounds of grease, slight increases over last year's consumption, but its maneuvers next year probably will be no more extensive than during the current year.

The Navy has no thought whatever of opening up its naval petroleum reserves to supply itself with oil, even in the event of war, and it will continue to supply its requirements from commercial American production, retaining its reserves against possible depletion of commercial fields. It is hoping, however, to expand its storage facilities for oil at many strategic points. A step was taken in this direction last year in the acquistion of Craney Island near Hampton Roads, Va., a former Shipping Board fuel oil storage station. This station has storage tanks for 1,100,000 bbls. of oil and complete facilities for servicing ships with all types of petroleum products used by the Navy. It is planned to keep this and all other storage facilities on both coasts completely stocked at all times and if funds are provided naval officials hope to increase storage facilities at various points. Congress is now considering a plan to construct additional naval bases of various types along both coasts, near the Panama Canal, in Alaska, and in the Pacific, and if these plans are adopted it will mean the creation of additional oil storage depots and, incidentally, much more steaming of both fighting ships and auxiliary craft between these various points, all of which will add to the Navy's oil requirements in future years.

The Navy's tank ships, or oilers, as it calls them, are used almost exclusively for servicing its

(Continued on Page 98)

Patrol bombers, U. S. Navy



SPARKS FROM THE NEWS

BETTER AND CHEAPER

A government report shows gasoline quality improved last year. Unfortunately it was also cheaper.

SPEED

It's a mistake to suppose things always drag in the oil business. For instance, natural gasoline ripped off a quarter-cent in each of three successive days.

WIDE SEARCH

With production slowly declining, private companies and the government are hunting for new reserves on both sides of the Andes in Peru.

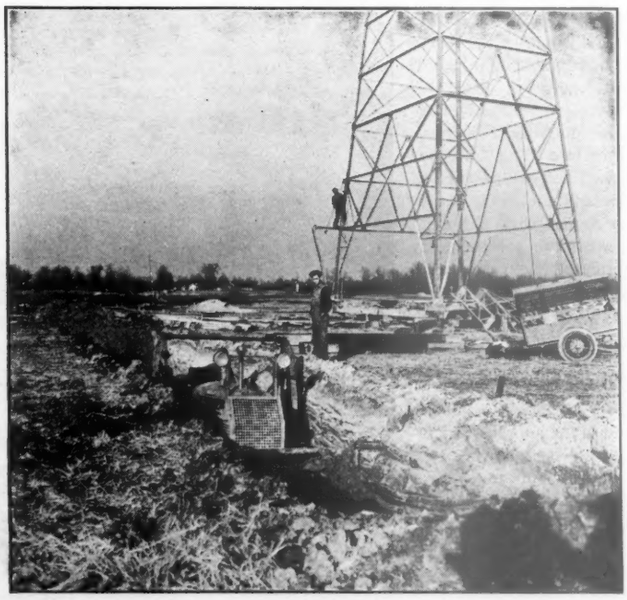
PASTIME

The new 67-octane third-grade gasoline deprives the motorist of one form of diversion. With the old kind he could try to guess what its octane rating was anyway.

CITY POOL

A 1-mile extension is additional evidence that Shreveport has an important oil field within and outside its gates.

SPEED IN SLUSH PITS



Only 1½ hours required to provide pit in Illinois field

SEASONAL ACTIVITY

Leasing in the Forest City basin area of Missouri, Kansas, Iowa and Nebraska continues at boom stage, but little or no drilling activity is expected until winter relaxes its grip.

FORESIGHT

A townsite drilling campaign has started at Cement, Okla., but there will be no crowding—the town council having restricted drilling to one well to the block after $10,100 per well has been paid into city coffers.

WITH TEETH

Having learned its lesson, Arkansas now proposes a conservation act with plenty of teeth in it.

TONS OF PIPE LINE

The 15,000-ton pipe order placed by a company which has served the area for many years, reflects the need of more outlets in southern Illinois.

IMPORTANT CONTRIBUTION

In the Mid-Continent, 126 operating refineries are doing their part in balancing supplies with needs by running less crude to stills than in January 1938 or 1937.

KANSAS GASSER

Just to show it has gas as well as oil, Kansas reports a 26,000,000 cu. ft. gasser in Sedgwick County.

DEEP DISCOVERY

The 16-year-old Wheeler Ridge field of California assumes new importance with a discovery at 8,700 feet.

PEACEFUL INDUSTRY

Petroleum in this country derives most of its markets from peaceful pursuits, and expanded defense plans will add little to the total.

PAST AND PRESENT

The spudding-in of a wildcat in Elbert County, Colorado, caused wide comment at A.P.I. meeting in Colorado Springs last summer. Last week it was abandoned at 7,585 feet.

Cars Do Not Fully Utilize High Quality of Gasoline

By W. T. ZIEGENHAIN

DETROIT, Mich., Jan. 13.—Modern motor fuels are better than needed to economically operate new cars was the claim made by refining engineers before more than 400 men assembled in the Fuels and Lubricants divisional meetings here as an important part of the 1939 annual convention of the Society of Automotive Engineers. Other divisions of the society, including Aircraft, Diesel Engine, and Passenger Car, held equally well attended meetings to make the six-day convention which closed today one of the most successful in the history of the society.

National Defense Day

A feature of the meetings was the observance of National Defense Day, during which Maj. Gen. Henry H. Arnold, chief of the air corps, spoke. He asked that refinery technologists and automotive engineers be prepared to service fighting planes capable of traveling a mile in 8 seconds. He said, "It appears that no plane can be considered for future development which will not have a speed in excess of 400 miles per hour and our engineers are talking quite seriously of 500 miles per hour as a practical possibility." Engines of 2,000 to 3,000 horsepower each will be needed on each plane and motor fuels of the highest quality will be demanded. He continued: "Gasoline engines are so rapidly approaching the capabilities of Diesels that the latter are going by the board."

Oil men saw another exacting demand immediately ahead in the form of specialty tractor fuels as a result of statements made by Maj. Gen. C. M. Wesson, chief of ordnance, who said the army had found it decidedly cheaper to use tanks than men in battle. Large fleets of light and heavy tanks will probably be built over the immediate future as he said "although our exact commitments may not be revealed you will remember we ordered more than 22,000 tanks and 25,000 tractors in 1918."

These remarks naturally caused refinery and automotive engineers to view their work with a much broader outlook than they had been accustomed and their viewpoint was further widened when they heard Brig. Gen. C. T. Harris, Jr., state that 10,000 American industries have been mobilized for the manufacture of war materials if the need comes.

This in turn means that standardization of parts and interchangeability of automotive parts will receive greater attention. It also means some slight sacrifice of exactness of engine, chassis and body design in many instances, a matter which was uppermost in importance in the minds of engineers who discussed modern passenger car engine performance.

Neil MacCoull, of Texas Co., and T. B. Rendel, of Shell Petroleum Co., were especially critical of the broad tolerance permitted by automotive manufacturers in such items as spark-timing devices and automatic chokes. It was even suggested that refinements be made to the gasoline engine that would bring about the fullest economy of fuel for which manufacturers say they are striving. One example of lost economy due to imperfect engine design was reported wherein the lag of a new standard distributor caused a loss in power output of 2 per cent from maximum and required the use of a gasoline of eight octane units higher than would have been needed if timing had been exact.

B. E. Sibley of Continental Oil Co., and D. P. Barnard, of Standard Oil Co. of Indiana, chairmen, presiding over the meetings of the Fuels and Lubricants Division, found ready response to the questions prompted during the course of the meetings.

The election of W. J. Davidson as president of the society for 1939 was announced at the business session on Tuesday. Mr. Davidson was executive secretary of the general technical committee of General Motors when the famous General Motors proving ground was built and is now an executive in the newly formed Diesel engine division of that company.

Other new officers for 1939 include: G. L. Neely, Standard Oil Co. of California; L. J. Grunder, Richfield Oil Corp., as councilors, and A. G. Marshall, Shell Oil Co., as vice president.

Abstracts of papers follow:

SPARK TIMING AND ITS RELATION TO ROAD OCTANE NUMBERS AND ENGINE PERFORMANCE

By S. E. Hebl and T. B. Rendel

(Presented at meeting of Fuels and Lubricants Division)

In order to sell cars automotive engineers have fitted them with many kinds of adjustable parts which will reduce motor knocking. This practice appears reasonable in view of the wide variations in the octane values of the various motor fuels available. It was the purpose of the authors to determine the effect of these adjustments upon motor fuel consumption and power output. Spark timing was first studied. In some engines this timing is done automatically according to the speed or load. In this experiment the automotive devices were disconnected and nine cars were supplied with 90-octane gasoline at speeds of 5 to 60 miles per hour. The 90-octane fuel eliminated any effect of detonation. When the spark-timing position was varied below and ahead of dead-center for each speed it became apparent that when the spark is retarded from that which gives maximum power the output of the motor decreases more sharply at high speeds than at low speeds. To determine fuel consumption at varying spark-timing settings the throttle-opening was used which corresponded to a level-road load on each car. The results indicated that for maximum part-open throttle economy the spark should be advanced over that for maximum power at full throttle. Next the authors reported results upon limitations placed upon spark advance due to detonation. Their conclusions were prefaced by the following observations:

1. To obtain maximum power at all speeds without detonation would require a fuel of approximately 85-octane number.

2. When using a fuel of 70-octane number the spark can be timed to give maximum speeds above 40 miles per hour but must be retarded at lower speeds to avoid detonation.

In order to retard the spark at low speeds and avoid knocking some loss in power results. It has been shown the degree of power loss varies with the fuel used. To determine the degree of power loss as the fuel characteristics were varied the authors reported results when using a 70-octane reference fuel blend; a 70.8-octane vapor phase cracked gasoline and a 70.1-reformed gasoline. Running each of these over a wide range of compression ratios, speeds and spark timing the general conclusions were that although the A.S.T.M. octane values of the three fuels were about equal, the vapor-phase gasoline allowed a much more advanced spark timing at a 5 to 1 compression ratio. Even at 6.7 to 1 the cracked and reformed gasolines were considerably better in road antiknock value than the straight-run gasoline, especially at low speeds. At higher compression ratios such as 7.8 to 1 the road antiknock values of the cracked and re-

REFINERY TECHNOLOGISTS ACTIVE IN S.A.E.

A. G. MARSHALL *D. P. BARNARD* *B. E. SIBLEY* *T. B. RENDEL*

formed gasolines dropped sharply and allowed less spark advance than the 70-octane reference fuel blend at speeds above 23 miles per hour. From these it appears such fuels may insensitive to pressure and that the antiknock values of these fuels may decrease with increasing pressure more rapidly than do those of straight-run fuels. From a practical standpoint it may mean that the advantages now enjoyed by cracked fuels over straight-run fuels may diminisn rapidly if compression ratios of engines are increased materially.

AUTOMOTIVE MULTI-CYLINDER ENGINE DETONATION AND MIXTURE DISTRIBUTION

By A. J. Blackwood, C. B. Kass, and O. G. Lewis
Standard Oil Development Co.

(Presented at meeting of Fuels and Lubricants Division.)

In an effort to determine the cause for wide discrepancies in knocking tendencies among cars of identical design the authors report the results of tests on an eight-cylinder in-line motor, in which tests exhaustive work is undertaken to determine the detonating characteristics of the individual cylinders. Obviously, if the detonating characteristics of the various cylinders of a single multi-cylinder engine vary, it seems logical that differences in detonating tendencies will be noted among different engines. In this work the authors studied the effect on the air-fuel mixture distribution; variation in the spark advance on individual cylinders; the knocking tendency of the individual cylinders and the octane-number requirement of each of the cylinders.

The first step in studying the mixture distribution problem was to determine the variation in mixture strength, from cylinder to cylinder, when fuels were used ranging from regular grade gasoline to butane. Exhaust gas analyses for the individual cylinders revealed perplexing complications; for example, No. 1 cylinder receives progressively leaner mixture as the engine is speeded up, whereas No. 5 cylinder receives a progressively richer mixture.

The problem of correlating these results with those found when studying the knocking characteristics of individual cylinders was further complicated by learning that when No. 1 cylinder was in a position for sparking to produce maximum power other cylinders fired as much as 6 to 8 degrees off this mark. Inasmuch as spark-timing and power output are closely related, a study was conducted to determine the cause for the error in timing among the various cylinders. It soon was established the variation was caused chiefly by irregularity in the distributor-cam contours. New distributors showed as much deviation as used ones.

From the authors' work the conclusions reached were: The wide differences found in the octane-number requirements of individual cylinders, plus the failure to obtain uniform mixture distribution from cylinder to cylinder without resorting to fuels of aviation grade volatility, make it appear present-day cars are not utilizing the superior motor fuel qualities being provided for them by the petroleum industry. Precautionary measures might be included in assembling the engines at the factories to insure that the cylinders normally receiving fuel mixtures most likely to detonate do not receive simultaneously the greatest spark advance. If these precautions are taken, the engine would require fuels of lower octane value for satisfactory performance which, in time, would permit utilizing higher compression ratios in future engines with resulting higher efficiencies even though the same fuel is used.

COMPULSORY SAFETY LANE TESTING FROM THE ECONOMIC VIEWPOINT OF THE FLEET OPERATOR

By J. F. Winchester and J. J. Powelson
Standard Oil Co. of New Jersey

(Presented at meeting of Transportation and Maintenance Division)

To encourage safety in automotive construction and operation is to encourage the use of automobiles and trucks. The authors have evaluated the program of safe driving among fleet owners as shown by records of the Department of Motor Vehicles of New Jersey. This state has established 28 inspection stations which operate 45 safety lanes each one of which is equipped with a wheel alignment indicator; headlight tester; brake tester and lift to inspect the under side of the car.

DURATION OF COMBUSTION IN A COMMERCIAL DIESEL ENGINE

By A. F. Robertson, R. A. Rose, and G. C. Wilson
University of Wisconsin

(Presented at meeting of Diesel Engine Division)

By means of a photo-electric combustion chamber indicator, developed by the university, a synchronized film drum and a top-dead center indicator (TDC), the authors were able to offer a test procedure for studying Diesel engine performance. They indicated that high-cetane fuels show a general tendency towards greater after-burning than low-cetane fuels. It was further shown it is undesirable to expose the fuel very suddenly and in a poorly vaporized condition to flame temperature.

Reporting upon results when using six Diesel engine fuels ranging in cetane value from 25 to 87 the authors concluded "the short combustion period and the higher fuel consumption shown for the low-cetane fuels indicate the fire goes out before all of the fuel is consumed."

POWER LOSS ACCOMPANYING DETONATION

By Neil MacCoull
Texas Co.

(Presented at meeting of Fuels and Lubricants Division)

Engineers question the economic justification of supplying a motor fuel that will guarantee freedom of the car from knocking at all times and under all road conditions. Mr. MacCoull has determined the power-loss among several typical motor cars when each was run on a series of gasolines of graduated octane values. Under the conditions of test his results indicated only a 2 per cent power-loss accompanied use of a gasoline of 15 octane numbers lower than required for complete absence of knocking. However, the author points out that these results are influenced by adjustments the automobile manufacturers have built into the cars and not all motorists could expect such results.

The adjustment most commonly used to eliminate knocking is, of course, to change the timing of the spark. The data showed that retarding the spark 10 degrees from the 20 degrees required for maximum power lowered the octane requirements eight numbers and caused a power loss of 2 per cent.

For the purpose of presenting more exact conclusions the author defines the critical compression ratio for the fuels and engines used in the series of tests as that which produces borderline knock with spark timed for maximum power and mixture ratio adjusted for maximum knock. With this understanding he concludes:

"The spark-timing to be used for compression ratios above critical should be retarded from that which would give optimum power for a fuel that does not knock at these compression ratios."

It appears feasible to operate an engine above its critical compression ratio provided the spark timing is adjusted for maximum power for the fuel in use. For each increase of compression ratio there is an increase in power until limited by preignition of the fuel.

The tendency for a fuel to preignite varies inversely with its antiknock value but is influenced by the design of the cylinder head. It is only slightly influenced by spark advance.

It appears desirable to use a compression ratio at least one unit higher than critical for the fuel to be used, and retard the spark sufficiently to eliminate knocking. This will result in higher engine efficiency; and if it becomes desirable to use a higher octane fuel, it makes possible a noticeable gain in power by suitably advancing the spark.

ANNUAL REVIEW NUMBER

January 26

Reviewing 1938 results as a basis for forecasting the industry's progress in 1939

Next week is published the Annual Review Number of The Oil and Gas Journal. Well over 250 pages in size, it completely reviews 1938 to provide you a dependable basis for future operations.

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State engineers taking bottom-hole pressure in Schuler field

Governor Bailey Urges Arkansas Conservation Bill

LITTLE ROCK, Ark., Jan. 16.—Enactment of an oil and gas conservation act was recommended by Governor Carl E. Bailey in his address to the general assembly in which he said:

"After several years of inactivity, oil production is on the increase and Arkansas is now on the threshold of great development. In the past two years several new fields have been discovered. Oil production has increased over 100 per cent. Wells are now being drilled in 15 counties. In many other counties seismographs are 'shooting'. Crews are operating in the search for new oil structures.

"Oil and gas are irreplaceable resources. If the state is to realize the greatest benefit from these resources development should be controlled and supervised by the state. I have instructed the Arkansas Board of Conservation to prepare a proper conservation bill so that the interests of the state and its citizens may be protected. I have examined the bill it has carefully prepared, believe it to be fair and equitable, and recommend its passage."

The bill, introduced in the senate by Senator Mason of Ouachita County, is designed "to prevent waste, provide conservation of crude oil and natural gas and products and protect the vested, coequal or correlative rights of owners of crude oil or natural gas, and creating an oil and gas commission and authorizing it to provide for the spacing of wells and to designate drilling units."

Funds Provided

The bill provides a method of obtaining funds to meet costs of administration in connection with the regulation or control of "flush" pools. All common sources of supply of crude oil and natural gas discovered after Jan. 1, 1937, "shall have the production controlled or regulated," and the commission is authorized to assess a charge not to exceed 5 mills on each barrel of oil, and a charge not to exceed one-half mill on each 1,000 cu. ft. of gas.

"The commission shall have authority to make inquiries to determine whether waste over which it has jurisdiction exists or is imminent. In the exercise of such power the commission shall have the authority to collect data; to make investigations and inspections; to examine properties, leases, papers, books and records; to examine, check, test and gauge oil and gas wells, tanks, refineries and means of transportation; to hold hearings; and to provide for the keeping of records and the making of reports; and to take such action as may be reasonably necessary to enforce this act."

In addition to the right to make rules to limit and prorate the production of oil or gas, or both, from any pool for the prevention of waste, the bill provides authority for the commission to make rules and regulations covering: The shooting, perforating and chemical treatment of wells, secondary recovery methods (repressuring) including the introduction of gas, air, water or other substances into producing formations, spacing of wells and establishment of drilling units, certificates or clearance or tenders in connection with the transportation of oil and gas, efforts to prevent reasonably avoidable drainage from each developed unit which is not equalized by counter drainage, and operation of wells with efficient gas-oil ratios, and to fix such ratios.

Five-Man Commission

An oil and gas commission composed of five members would be appointed by the governor, all members to be experienced in the development. production and transportation of oil and gas.

The commission would be given authority to appoint a director of production and conservation at a salary not to exceed $5,000 per annum, and to name such assistants, petroleum and natural gas engineers and others as necessary.

The commission may establish a drilling unit or drilling units for each pool except in such fields where such action would be impractical. A drilling unit is declared to mean the maximum area which may be efficiently and economically drained by one well, and the bill provides that each well permitted be drilled approximately in the center of the unit, unless an exception is granted. It also provides that when two or more separately owned tracts are embraced within a drilling unit, the owners may agree to integrate their interests, or the commission may require such owners to develop their lands as a unit, with the owners to share the expense.

The section providing for fixing of allowables states that limit on the amount of oil or gas shall not be less than the aggregate of the allowables fixed for each separate pool plus the production from unrestricted pools, and that such allocation or distribution among the pools shall be on a reasonable basis. It also provides proration of the allowable production among the producers in a pool on a reasonable basis to prevent or minimize avoidable drainage when the commission limits the total amount of oil or gas which may be produced from any pool to an amount less than what the field could produce if no restrictions were imposed.

The sale, purchase or acquisition or the transportation, refining, processing or handling in any other way of illegal oil, illegal gas or illegal product is prohibited. The commission is empowered to seize illegal oil, illegal gas or illegal product as contraband, to be sold either by the sheriff or a conservator appointed by the court.

It is unlawful to permit negligently any gas or oil well to get out of control, and the commission may take charge in event of failure of the owner to act after 24 hours notice.

The bill asks that an emergency be declared:

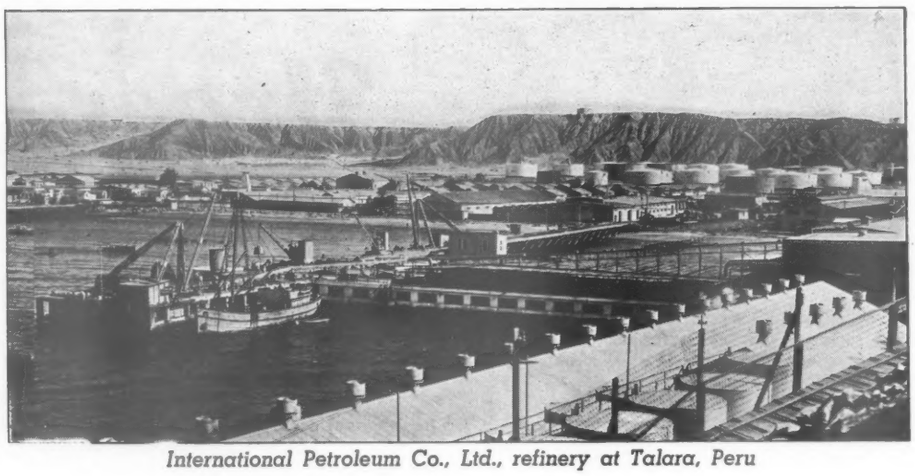
"It is hereby declared that existing laws determining the authority of the state and the Arkansas Board of Conservation to conserve the oil and gas resources of the state, do not sufficiently define such authority, and such condition has greatly handicapped the board in the proper administration of its duties; therefore, an emergency is hereby declared to exist, and it being necessary for the immediate preservation of the public peace, health and safety, this act shall take effect and be in full force from and after its passage."

The bill states "waste," in addition to its ordi-

(Continued on Page 26)

Gas-oil ratio test with portable meter, Village field

Government and Companies Seeking Oil Areas in Peru



International Petroleum Co., Ltd., refinery at Talara, Peru

By L. G. E. BIGNELL

Private companies with large holdings and a specially created and equipped department of the government are searching for new oil reserves in Peru at widely scattered points. The crude-oil production from existing fields, which now averages about 44,000 bbls. daily, has shown a small yearly decline since 1936, and there is no assurance this trend will change in the immediate future unless new fields are discovered in some of the areas now under exploration. Accumulative production at the end of the year was slightly in excess of 239,000,000 bbls.

Most of the oil in Peru comes from three fields located near the northern tip of the 1,400-mile Pacific Coast shoreline. The oil fields are known as La Brea Parinas of the International Petroleum Co., Ltd., the Lobitos-Restin, and the Zorritos fields. These fields are in the arid coastal plains, but two other prospective oil areas are located in regions of sharp contrast. The Pirin district at the north end of Lake Titicaca is on the southern plateau, while the region at the confluence of the Pachitea and Ucayali rivers on the eastern boundary gives promise of being developed into an oil field of major importance.

The International Petroleum Co., Ltd., and the Lobitos Oilfields, Ltd., which have practically all the production in Peru, are pioneer operators in that country. The Lobitos company acquired the properties of the Peruvian Petroleum Syndicate, Ltd., in 1908. It now operates in Peru under the name of La Compania Petrolera Lobitos, a wholly owned subsidiary. Its area in Peru totals about 200 square miles. It is an English company with its main offices in London. The company has production in Ecuador.

CRUDE OIL PRODUCTION IN PERU BY FIELDS
(Data in barrels)

	1938*	1937	1936	Accumulative output
La Brea y Parinas	13,150,000	14,722,754	15,126,490	191,540,767
Lobitos	2,700,000	2,695,048	2,417,557	44,016,783
Zorritos	39,000	39,393	49,012	3,168,578
Total	15,889,000	17,457,195	17,593,059	†239,012,064

*Preliminary data. †Includes 285,936 bbls. produced in Pirin area which was last reported producing in 1915.

The International company, which is controlled by the Imperial Oil, Ltd. (Standard of New Jersey), is a Canadian company which directly and through subsidiary companies has important oil interests not only in Peru but other South American countries. Main offices of the company are in Toronto, Canada. Of the present crude oil production of Peru, International has 81 per cent, Lobitos 18 per cent, with the remainder reported by local interests.

Spanish explorers report the occurrence of a liquid-like brea flowing from a spring near the coast in what is now known as the La Brea field. This tar-like material was used for caulking boat seams and other purposes and an industry sprang up there in the early 1700's when concessions were granted by the king of Spain for exploitation of the "brea" springs. It was not until 1860 when refined kerosene was first imported into Peru that the value of the "pez liquido" or the more fluid oil was appreciated. Attempts were made to establish a refinery to produce kerosene but without much success.

In 1867 an oil operator from Pennsylvania visited Peru and subsequently drilled some of the earliest wells at Zorritos. The first well is reported to have yielded 60 bbls. a day at a depth of 146 feet. The second well was deepened in 1876 to 500 feet and is reported to have spouted a stream of oil from the 6-inch casing to a height of 70 feet. This was the start of the petroleum industry in Peru which progressed and met with setbacks until about 50 years ago. The records indicate the Zorritos field has produced steadily since and in 1890 the La Brea-Parinas field started producing while in 1905 the Lobitos field produced 72,000 bbls.

These oil fields are centered more or less around the seaport of Talara, roughly 600 miles northward along the coast from Lima, the capital. They lie in a narrow coastal desert strip between the Pacific Ocean and the foothills of the Andes Mountains. Despite the low latitude and altitude the climatic conditions are favorable and average temperature is about 75° F. due to the moderating effects of the cooling Humboldt current, which flows northward a few miles offshore. There is little rainfall in the area.

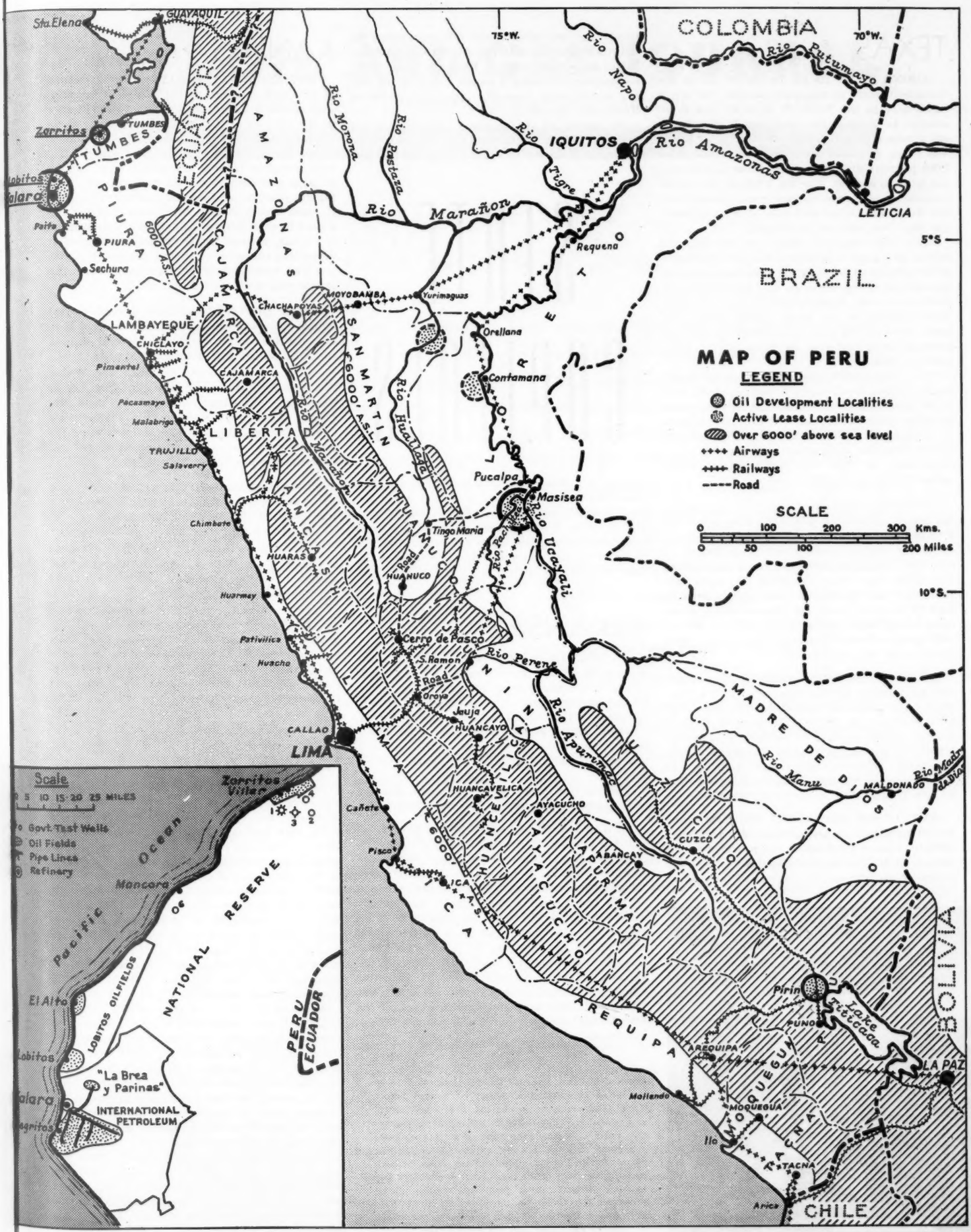
At the country's southern extremity, near Lake Titicaca, and high above tree line in the Andes, is the Pirin region. This is no longer an active producing region although several exploratory wells were drilled more than 20 years ago, but it is now being gone over again by geophysical parties in hope of finding other oil indications. This interandian plateau at an elevation of 12,000 feet is quite cool the year round.

An area which has in recent years come into notice lies in eastern Peru in the region between the Pachitea and Ucayali rivers. This is a country of dense tropical growth with the valley of the Ucayali River containing flat plains, swamps and tropical jungle.

The most northern oil field is the Zorritos field, which covers 7,315 acres. It is operated by F. G. Piaggio, a local operator, who first acquired interests in this area in 1875 and became owner of the property in 1883. The 40 wells produce about 50,000 bbls. of oil per year which is refined in a

(Continued on Page 28)

La Brea field


MAP OF PERU
LEGEND
Oil Development Localities
Active Lease Localities
Over 6000' above sea level
Airways
Railways
Road
SCALE
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0 50 100 200 Miles
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BRAZIL
BOLIVIA
CHILE
ECUADOR
PERU
Sta. Elena
GUAYAQUIL
Zarritos
TUMBES
Lobitos
Talara
Paita
PIURA
Sechura
LAMBAYEQUE
CHICLAYO
Pimentel
CAJAMARCA
Pacasmayo
Malabrigo
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Tingo Maria
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Rio Ucayali
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S. Ramon
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Jauja
HUANCAYO
HUANCAVELICA
AYACUCHO
ABANCAY
CUZCO
Rio Apurimac
Rio Manu
MADRE DE DIOS
MALDONADO
Rio Madre de Dios
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Pacific Ocean
Mancora
NATIONAL RESERVE
LOBITOS OILFIELDS
El Alto
Lobitos
Talara
Negritos
"La Brea y Parinas"
INTERNATIONAL PETROLEUM
PERU
ECUADOR

STATE CAPITALS

TEXAS

AMONG BILLS TO BE INTRODUCED at the Texas legislature in its present session that are of importance to the Texas oil industry, one is an attempt to increase the maximum load commercial trucks may carry over the highways. Effort was made to increase the maximum load (now 7,000 pounds) during the past three legislatures, but with no success. The No. 1 bill on the senate calendar is, of course, the preferred measure and the No. 2 will be pressed only if it is apparent the No. 1 bill will not be adopted.

No. 1 bill modeled chiefly on an Arkansas statute, professes to propose a scientific treatment of the problem of deriving the maximum economic benefits out of the highways at a minimum wear-and-tear expense. It proposes to fix approximately 38,000 pounds as the gross weight (truck and load) that could be moved by trucks having low-pressure tires, and less for those having high-pressure tires.

No. 2 bill would provide that no two-axled motor vehicle could carry a load of more than 12,000 pounds over the highways, and no three or more axled vehicle more than 20,000 pounds. It is expected, however, that if the proponents of the bills find themselves hard pressed, maximum loads of 10,500 and 18,000 pounds would be satisfactory as a compromise.

ATTORNEY GENERAL GERALD C. MANN has issued an order on which the state is holding 126,714 bbls. of confiscated illegally produced crude for higher prices, pending enactment of new "hot" oil measures by the Texas Legislature. The state has been receiving 18 cents for auctioned "hot" oil, worth in the open market at least 75 cents per barrel. Mr. Mann said he would block further sales until he can work out a permanent policy whereby the state will receive more nearly what the oil is worth.

OIL FIELD HEARINGS called by the commission for January include: On January 25 a hearing for promulgating field rules for the Louis Sikes discovery on the H. Ford farm, T. C. Cecil Survey, Archer County; on January 30 a similar hearing for the Stribling estate discovery, J. Koehler Survey, Stephens County, and on January 24 the commission will take evidence on gas-oil ratio for the Teddlie sand in the Benavides field.

TWO OTHER IMPORTANT BILLS affecting the oil industry were also placed in the legislative mills by Senator Clint Small, one provided for extension of the oil conservation laws which will expire unless renewed by the end of the current fiscal year; the other a new bill authorizing the Railroad Commission to prevent subsurface drainage of gas across property lines, the latter being necessitated following a recent ruling of the federal courts that currently attempted proration efforts were invalid.

In regard to the proposed measure on gas drainage in the Panhandle, the commission on December 19 issued an order to regulate gas production which a three-judge federal court later invalidated. Under present proration laws, the court held the commission could not regulate undue drainage from adjacent property but could only limit production. This bill would give the Railroad Commission authority to regulate drainage.

When new Texas Railroad Commissioner G. A. Sadler found capitol lights cannot be burned before 6 a.m. last week he wrote the Board of Control as follows: ". . . due to the fact that I am a country boy and have been in the habit of getting up early and going to work, I would appreciate the board's permission to burn the lights of my office at such times other than office hours that I might choose to work. If you cannot grant this request, please grant me permission to burn a coal oil lamp in my office." Hearing of his predicament the Sweetwater Club sent him a kerosene lantern.

ARKANSAS

AN OPEN HEARING on Senate Bill 26 to create a state oil and gas commission in Arkansas will be held January 19 at 7:30 p.m. by the senate oil and gas committee. The commission will take the place of the present Arkansas Board of Conservation and if passed in its present form will give Arkansas the most comprehensive oil and gas law in the country, in the opinion of its sponsors.

The bill was drawn up by the board, and has been given the approval of Governor Bailey.

ARKANSAS BOARD OF CONSERVATION has called a hearing at 10 a.m. Friday, January 20, at El Dorado, to determine whether or not the waste of crude oil or natural gas is taking place "in the state or is reasonably imminent."

The board's call stated that it "particularly desires to hear evidence for the purpose of determining the daily amount of crude petroleum oil and natural gas that may be produced without waste" in the following fields: Buckner, Columbia and Lafayette counties; Magnolia, Columbia County; Village, Columbia County; South Miller (Rodessa); Jones sand and Reynolds lime, of the Schuler field, Union County, and Atlanta, Columbia County.

KANSAS

GOVERNOR PAYNE RATNER, in the course of his first message to the Kansas Legislature recommended the strengthening and clarification of the oil laws of Kansas; encouragement of the regining industry and aviation, and establishment of a state agency for industrial research. The new governor favored the retention of the exemption provision in the gasoline tax law, relating to gasoline used for non-highway purposes. He said, however, that "the motor fuel tax law should be strengthened to do away with evasions of the tax, without harassing the honest gasoline dealer and consumer of exempt gasoline with unfair and unreasonable regulations. I hope this session will work toward that end."

MORE DEFINITE ACTION toward solving Kansas oil problems was believed to have been started Friday in a conference of several oil leaders with Gov. Payne Ratner at Topeka.

Alf M. Landon, former governor, and Walter Fees, Iola, oil operator and chairman of the Republican State Committee, were among those discussing the stripper well problem in Southeast Kansas. Nothing developed from the meeting the governor said, except a start toward ironing out difficulties in the state's oil industry.

GOVERNOR RATNER RECEIVED a copy of a resolution from his Kansas industrial conference proposing a state industrial commission to head an extensive program of industrial development.

The subcommittee of 26 industrialists, headed by Harry Crane, Topeka, expects to present the resolution to the legislature and to gain early attention from the lawmakers.

The industrial commission proposed would consist of from three to nine members, with the governor serving as an ex-officia member. Commissioners would be appointed by the governor and be responsible to him. They would serve without compensation, but would receive "actual and necessary" expenses in connection with the work.

CALIFORNIA

AS A CONSERVATION AND CURTAILMENT measure, operators in the Long Beach Harbor section of the Wilmington field of Los Angeles Basin have agreed to refrain from exploiting the Ford zone during 1939. A similar agreement existed during 1938 with the result that no operator in the eastern end of the field went down to this horizon. At a meeting in Long Beach, January 12, called by E. E. Pyles, chairman of the Emergency Executive Committee of Independent Oil Operators, owners of wells in the Signal Hill field approved a one-day shutdown to aid in the present drive to get California production down to 600,000 bbls. per day. The field has been divided into five areas, each of which will be shut down on one day of the five days from Monday through Friday of each week with all wells allowed to produce on Saturday and Sunday. The Emergency Committee has developed this plant to answer some of the arguments of operators in the area that further curtailment of their wells by pinching in production would cause loss of production through water encroachment. A number of operators in the Long Beach field conformed with this program during the past week. This staggering of production suspension proved effective during the first week. The Petroleum Fact Finding Committee appointed at the general curtailment meeting in Los Angeles December 20 held a conference in Los Angeles on January 16 and a second meeting in Bakersfield on January 18.

The OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

Published weekly by The Petroleum Publishing Company at Tulsa, Oklahoma

Misguided Zeal

It is becoming increasingly evident that Illinois holds the key to the immediate trends in the oil business and that these trends depend, to a large extent, upon the action of the legislature now in session.

The misguided zeal of some civic organizations is one of the principal reasons for legislative inaction. Members of these bodies are new to the oil business and do not understand its problems, but they are amenable to reason if the facts are made known to them.

They do not realize that their communities have as much at stake in the orderly development of these oil fields as the oil interests involved. Consider a few figures:

Conservative estimates of the proven crude oil reserves in Illinois, at the first of this year, in the old and new fields, aggregated 225,000,000 bbls. Some have stated they would not favor any type of proration until the daily production of Illinois had been expanded to a total of 250,000 bbls. daily, which presumably represents the petroleum requirements of the state.

A production of a quarter million barrels a day is better than 90,000,000 bbls. yearly. If Illinois could produce that quantity of crude oil it would dissipate practically all its present proven production in two years.

It cannot, of course, produce anywhere near that quantity of crude, except for a very brief period, even if it had the necessary pipe line outlets.

A continuance of its present policy, however, will result in the early exhaustion of those areas which are now being produced as wide open as market outlets will permit.

What these communities really want from the oil industry is a contribution to their permanent prosperity and growth. Insisting upon wide-open production will mean that this cannot take place. Their experience will duplicate that of many communities where oil was found in the days when fields were produced without restraint as soon as they were discovered.

They enjoyed a short feast while it lasted but the resulting famine was just as certain. There are no deader places in the southwest than some of the communities which for a short time were the centers of oil fields.

The rapid expansion of those fields caused these communities to build away out of proportion to the permanent requirements and when the boom was over, in many cases, they were worse off than they were before.

Under the conservation conception, taught by disastrous overproduction and better engineering knowledge, all this has been found unnecessary.

There are oil areas today in which companies are establishing operations they are expecting to continue for 25 or more years. They are building for permanency and the communities in which they operate will benefit permanently. These oil companies become an integral part of the business growth.

Operations in Illinois can be carried on upon the same basis provided conservation principles are incorporated into law to permit operators to observe practices which will secure the largest recovery over many years.

If this legal background is not provided operators will have no choice other than to look upon the state as an area where they will have to get what they can as quickly as possible, knowing the opportunity is certain to be temporary in character.

In short, Illinois faces the choice of whether its oil development is to be an overnight episode or whether it will prefer much larger benefits over a longer period.

The proper way to look at neighboring oil activities is to get some permanent contribution to the wealth of the community, not just a little temporary boom leaving effects that may be more injurious than beneficial.

Natural Gasoline

Recent Report Shows Increased Natural Gasoline Production

The daily average production of natural gasoline for November, 1938, was 5,942,000 gallons, according to a report prepared by the Bureau of Mines. This is 15,000 gallons above the average for October but 35,000 gallons below that for November, 1937. The outstanding changes occurred in Oklahoma City, East Texas, Osage County and Seminole which decreased, and in the Panhandle and Kettleman Hills which increased.

Stocks at refineries and plants and terminals decreased 43,218,000 gallons in November, or from 284,382,000 gallons the first of the month to 241,164,000 gallons on November 30. Most of the decline was in stocks at the plants and terminals.

Shipments to jobbers and retailers increased slightly, but exports decreased materially, or from 29,190,000 gallons in October to 18,438,000 gallons in November.

The average vapor pressure of exports and shipments to refinery-owned bulk plants and jobbers and retailers increased, but that of shipments to refineries decreased. The weighted average for all movements was 20.1 pounds compared with 20 pounds in October, and 21.3 pounds in November, 1937.

NOVEMBER RECEIPTS AND DELIVERIES BY DISTRICTS

(Thousands of gallons)

	Nov., 1938	Oct., 1938	Jan.-Nov., 1938	Jan.-Nov., 1937	At refineries
East Coast	.....	.....	.....	.....	3,780
Appalachian	6,573	5,564	60,006	64,800	462
Illinois, Michigan, Kentucky	1,171	1,215	11,449	11,200	4,242
Oklahoma	37,896	41,167	430,683	449,000	1,638
Oklahoma City	10,617	12,025	128,610	151,800	.....
Osage County	4,162	4,982	46,354	51,500	.....
Seminole	9,381	10,364	109,226	111,300	.....
Rest of state	13,736	13,796	146,493	134,400	.....
Kansas	5,044	4,737	48,621	51,900	.....
Texas	55,493	57,222	598,427	560,898	5,208
Gulf	5,653	6,252	56,802	34,300	4,242
East Texas	14,238	15,790	171,076	170,700	.....
Panhandle	20,615	19,350	208,721	208,298	.....
North Texas	2,113	2,262	23,399	23,500	.....
West Central	6,066	6,093	63,534	64,200	.....
Rest of state	6,808	7,475	74,895	59,900	.....
Louisiana	7,299	7,375	78,762	96,900	84
Arkansas	2,088	2,398	22,028	10,200	420
Rocky Mountain	7,144	7,612	72,313	68,300	2,898
California	55,540	56,460	608,535	569,200	120,624
Huntington Beach	3,426	3,537	38,980	37,900	.....
Kettleman Hills	16,218	16,119	170,876	167,900	.....
Long Beach	7,700	8,115	85,370	77,600	.....
Santa Fe Springs	4,985	5,196	58,240	58,300	.....
Ventura Avenue	5,105	5,001	52,020	54,200	.....
Rest of state	18,106	18,492	203,049	173,300	.....
Total	178,248	183,750	1,930,824	1,882,398	139,356
Daily average	5,942	5,927	5,781	5,636	.....
Total (thousands of barrels)	4,244	4,375	45,972	44,819	3,318
Daily average	141	141	138	134	.....

PRODUCTION AND STOCKS OF NATURAL GASOLINE

(Thousands of gallons)

	Deliveries				Receipts		
	To refineries	To refinery-owned bulk plans	To jobbers and retailers	Exports	At refineries	At refinery-owned bulk plants	By jobbers and retailers
East Coast	.....	.....	.....	.....	9	25	35
Appalachian	3,694	262	2,624	1,613	2,641	264	1,446
Ind., Ill., Ky., etc.	1,026	.....	326	.....	24,182	2,799	4,080
Oklahoma	35,734	1,721	2,625	73	22,978	34	1,816
Kans., Mo., etc.	3,551	90	251	.....	17,920	1,098	437
Texas inland	46,416	2,372	4,208	113	42,960	216	2,837
Texas Gulf	18,941	.....	184	15,465			
La. and Ark.	5,689	8	1,854	185	5,880	17	1,401
Rocky Mountain	7,416	41	97	65	5,877	41	117
California	53,681	.....	515	924	53,681	.....	515
Total	176,148	4,494	12,684	18,438	176,148	4,494	12,684
Daily average	5,872	150	423	615	5,872	150	423
Total (thou. of bbls.)	4,194	107	302	439	4,194	107	302
Average vapor pressure	20.6	17.7	17.3	17.7	20.6	17.7	17.3

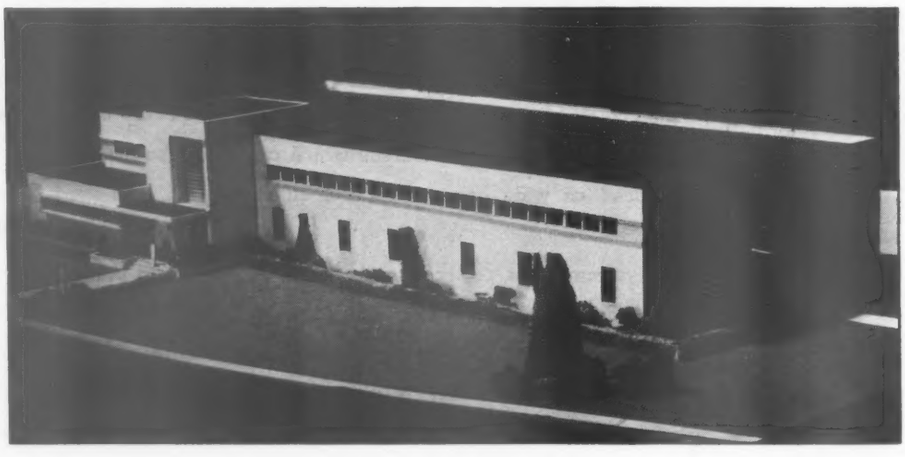
Refinery Expansion

Laboratory Under Construction by Standard Oil Co. of California

A new research laboratory building, costing about $320,000, is under construction by Standard Oil Co. of California adjacent to its refinery at Richmond. The building design reflects the study company experts have made of modern laboratory facilities. The building is in many ways unique both in its highly modernized exterior design and facilities for its technical staff. The very latest forms of artificial illumination and complete air-conditioning have been employed, to assure the most comfortable and efficient working conditions possible. There will be approximately 30,000 square feet of floor area.

The entrance lobby to the building will be two stories in height and flooded with light from a large vertical panel of glass brick. Immediately off the lobby will be a library and reading room. The remainder of the first floor will contain 12 large laboratories, a locker room, and a dispensary for chemicals and supplies. On the second floor will be located about 30 offices, housing the administrative personnel of the department as well as photographic and electrical laboratories.

This company already has a large four-story research and development laboratory building at the Richmond refinery, which will continue to be used. The new structure is to augment present technical facilities and make possible the utilization of the most advanced equipment and practices.



Sun's Houdry Units Financed by Debenture Sales to Equitable Life

PHILADELPHIA, Pa.—Frank Cross, treasurer of the Sun Oil Co., announced construction of new Houdry refining units at Marcus Hook, Pa., and Toledo, Ohio, would be financed with funds from the sale of $12,000,000 worth of 10-year, 2⅞ per cent debentures.

The debentures were sold to the Equitable Life Assurance Society last December 1, Mr. Cross said. The refineries will cost $5,500,000 each.

Russell to Build Plant to Refine Pondera Crude

Construction of a 200-bbl. topping plant to be located in Pondera oil field was announced by T. F. Russell, of Havre, Mont. Contracts for construction have been let and Mr. Russell and associates expect to have the plant completed and finished products ready for the market in the early spring.

Pondera oil field is virtually without a market, following loss of the Canadian market, and many leases are shut in. Home Oil of Great Falls is taking the production of the Rice properties but otherwise there is no outlet for this oil. Stanolind is producing the Chessher properties but is storing the oil. The Russell plant will take the production of Warren Oil Co., of which Mr. Russell is president, and adjacent independent properties.

Refinery to Be Built at Bloomingdale, Mich.

SAGINAW, Mich.—Construction of an $18,000 oil refinery in Bloomingdale, Van Buren County, in the midst of that village's town-lot oil development, is expected to begin next month if a suitable location can be found, according to Ray Lewis. Lewis, with southwestern Michigan financial backing, plans a refinery capable of handling 1,000 bbls. daily of the Bloomingdale's flush production.

National Refining Co. Sells Plant to Montreal Group

PETROLIA, Ontario.—Controlling interest in Canadian Oil Companies, Ltd., which operates a large refinery here, has been sold by the National Refining Co. of Cleveland, Ohio, to a Montreal group represented by Nesbitt, Thompson & Co. and believed to be

headed by John Irwin, formerly associated with the McColl-Frontenac Oil Co.

Canadian Oil Companies, Ltd., established about 30 years ago as a subsidiary of the National Refining Co., refines and distributes gasoline, lubricating oils and kerosene in eastern Canada. The Petrolia refinery has a capacity of about 100,000 bbls. a month, with storage for 600,000 bbls. The company owns and operates 145 gasoline stations throughout Canada.

Col-Tex Considers Building Asphalt Plant on Gulf Coast

An asphalt blending plant for the Col-Tex Refining Co. of Colorado City, Texas, is being contemplated. The Col-Tex Co. is a unit of the American Prichard Oil Corp. of Oklahoma City, which entered South Texas several months ago.

The plant is scheduled to begin operation by February 1.

The plant will turn out road oil and asphalt for topping highways.

The company already has a contract to furnish the county and city with about 180 cars of asphalt topping.

East Texas Plants Resume Operations After Shutdowns

LONGVIEW, Tex.—East Texas refineries have launched their annual spring run of operations and the end of the first week of January found practically every plant in the field, now in operating condition, going at a steady pace.

Among the plants that had been closed for various lengths of time during the latter part of 1938 and which have resumed operations are those of the East Texas Refining Co. at Longview, the T. O. P. Oil & Refining Co. at Gladewater, the McMurrey plant at Tyler, and others.

Chain of Refineries Planned For Alberta and Saskatchewan

CALGARY, Alberta.—Consolidated Refineries, Ltd., incorporated for $150,000 with head offices at Calgary, is planning to erect a chain of small refineries at strategic points in Alberta and Saskatchewan, with at least one plant in British Columbia. The plants will operate on Turner Valley crude. P. L. Hyde, independent distributor at Calgary, is head of the company.

Imperial Oil, Ltd., Expands Refinery at Regina, Sask.

REGINA, Saskatchewan.—Contract has been let to Foster Wheeler, Ltd., of Montreal, for construction of a bauxite oil treatment plant at the local refinery of Imperial Oil, Ltd., to cost approximately $300,000. The bauxite plant is intended to remove the sulfur from the Turner Valley crude now being processed here and which requires a different treatment from the crude formerly handled. The new plant will generally improve the quality of the refined product, particularly in raising the octane rating of the gasoline.

Work will also be started shortly by the Imperial Oil construction department on a $125,000 addition to the cracking plant here.

The present capacity of the refinery is placed at 7,000 bbls. per 24 hours, it being a skimming and cracking plant similar to the other large refineries of the company. The cracking plant, of tube and tank type, is listed as having 3,800 bbls. daily capacity.

Washington. The reporting companies handled 280,461,292 bbls. of oil in the three months period, a decrease of 16.18 per cent from 1937 traffic.

Pipe Received for Line From Stratton Field

SAN ANTONIO, Tex.—Corpus Christi Corp. has received the first of the pipe for its 4½-inch pipe line from the Stratton field to the ship channel at Corpus Christi, about 25 miles. The line will carry the high gravity distillate to tide water and some 1,200 bbls. daily will be running shortly through this line.

Illinois Pipe Line Co. Places Pipe Order

Illinois Pipe Line Co. has placed orders for 15,000 tons of pipe with Jones & Laughlin Steel Corp., National Tube Co., and Youngstown Sheet & Tube Co.

Natural Gas

Hearing on Exporting Texas Gas to Mexico

Application of Texas Gas Utilities Co. asking authority to export natural gas from Eagle Pass, Tex., to two purchasers in Piedras Negras, Mexico, will be called for hearing January 27 in Washington before the Federal Power Commission.

Wyoming Commission Files Cheyenne Rate Petition

CASPER, Wyo.—The Wyoming Public Service Commission has filed a petition with the Federal Power Commission at Washington asking it to establish a gas rate at Cheyenne for natural gas sold to the Cheyenne Light, Fuel & Power Co. by Colorado-Wyoming Gas Co. The last named are subsidiaries of Public Service Co. of Colorado, a Cities Service subsidiary.

Suit is similar to the one filed two weeks ago by the city and county of Denver asking for a revision of rates charged at the Denver gateway for gas brought from Texas Panhandle by Canadian River Gas Co. and Colorado Interstate Gas Co. It alleges that gas is sold to the Colorado-Wyoming company near Denver at 17 cents and that it charges 42 cents at the Cheyenne gate to the distributing subsidiary. The Denver petition alleged that gas was sold to the Public Service Co. for distribution in Denver at 42 cents and to its subsidiary, the Colorado-Wyoming company, for 17 cents for transportation to northern Colorado and Cheyenne.

Pipe Line Activity

Ten-Mile Gathering System Begun in Kermit Field

FORT WORTH, Tex.—Construction of a gathering system in the Kermit field of Winkler County has been started by Texas-New Mexico Pipe Line Co. The system, about 10 miles, will handle 2,500 bbls. of crude daily previously absorbed by Humble Pipe Line Co. Lease connections will be given Cities Service, Sinclair Prairie, Texas, and Tide Water Associated Oil companies, joint owners of Texas-New Mexico Pipe Line So. The pipeline company also is constructing a smaller system in the Church and Fields area of Crane County to relieve Humble of about 1,400 bbls. held by the same group of operators. Humble surrendered the connections in the two fields because of congestion on the New Mexico-Wink unit of its system, which is the only outlet for fields in the north portion of the West Texas basin area.

Construction Started on Cordele Field Line

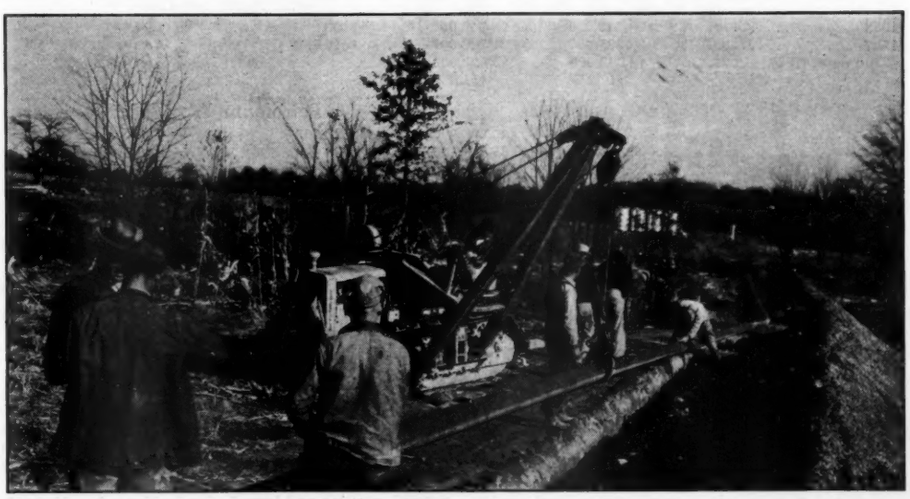
HOUSTON, Tex.—Cordele Pipe Line Co. has started construction of an 8-mile oil line from the Cordele field in Jackson County, to a loading rack, about 4 miles east of the town of Edna, where the oil will be shipped by tankcar to Crown Central Petroleum Co.

Cotton Valley Gas Line To Arkansas Plant

SHREVEPORT, La.—Louisiana-Nevada Transit Co. has applied for a certificate of public convenience and necessity to construct and operate a natural gas pipe line from the Cotton Valley field of Webster Parish, Louisiana, to the Howard County, Arkansas, plant of Ideal Cement Co. The proposed line will extend for 75 miles and will consist of 8⅝-inch stock. Its daily gas capacity will be 10,000,000 cu. ft. Gas is to be obtained from the properties of Oliphant Oil Co. in Cotton Valley.

Pipe Line Revenue Less In Third Quarter

Forty major pipe line companies under the jurisdiction of the Interstate Commerce Commission had transportation revenues of $56,188,421 in the third quarter of 1938, a decrease of 13.15 per cent from the corresponding period in 1937, it was announced from



On Texas Co. line near Salem, Illinois

Domestic Gasoline Demand Up 5 Per Cent in November

The daily average output of crude petroleum in November, as shown by the monthly report of the Bureau of Mines, was virtually the same as in October—3,285,600 bbls. for November, compared with 3,284,800 bbls. for October. Actually, the producing rate would have increased more than indicated if Texas had not had Saturday and Sunday shutdowns for all of November.

Daily average production in all the major divisions of Texas except East Texas increased in November. Production in California again turned upward, but Oklahoma continued to decline. Illinois, with 319 wells completed during the month (second only to Texas in drilling), passed the 100,000-bbl. mark for the first time since the boom of 30 years ago.

A material decline in exports of crude, coupled with decreases in runs to stills and fuel and losses, reduced withdrawals from crude-oil stocks, which, however, amounted to more than 4,000,000 bbls. in all grades.

Refined products.—With no apparent necessity of increasing the distillate yield in November, the gasoline yield remained at a high level; in fact, it increased .1 per cent over October to 45.0 per cent.

The demand for motor fuel in November greatly exceeded expectations, as "Indian summer" weather prevailed in a large part of the heavy consuming areas. The indicated domestic demand was 44,991,000 bbls., or 5 per cent higher than the demand in November, 1937. Exports of motor fuel declined materially from October, but the total, 3,698,000 bbls., was 12 per cent above the total of a year ago. From the standpoint of motor-fuel stocks, the November record was outstanding. Finished gasoline stocks increased about 500,000 bbls., but unfinished inventories were reduced about 250,000 bbls. and natural gasoline stocks 1,000,000 bbls., so that the total of all declined for the first November since 1934.

The fine weather affected domestic fuel consumption, and less kerosene and distillates were used than a year ago.

United States Supply and Demand—Crude Oil (Bbls.)

First eleven months 1938 and 1937

11 MONTHS—	TOTAL SUPPLY	TOTAL DEMAND	EXCESS DEMAND	EXCESS PCT.	DOMESTIC PRODUCTION	IMPORTS	INDICATED DOMESTIC DEMAND‡	EXPORTS	STOCKS REFINABLE CRUDE NOV. 30
1938	1,134,519,000	1,164,195,000	29,676,000	2.6	1,110,967,000	23,552,000	1,091,806,000	72,389,000	273,155,000
Daily average	3,531,000	3,485,000	.....	....	3,326,000	70,000	3,269,000	217,000	.....
1937	1,197,423,000	1,179,545,000	*17,878,000	*1.5	1,172,331,000	25,092,000	1,117,427,000	62,118,000	306,457,000
Daily average	3,585,000	3,531,000	.....	....	3,510,000	75,000	3,345,000	186,000	.....
Increase, 1938	†62,904,000	†15,350,000	.....	....	†61,364,000	†1,540,000	†25,621,000	10,271,000	†33,302,000
	†5.2%	†1.3%	.....	....	†5.2%	6.1%	†2.3%	16.5%	†10.8%

Supply and Demand—Refinery Products—Motor Fuels (Bbls.)

11 MONTHS—	TOTAL SUPPLY	TOTAL DEMAND	EXCESS DEMAND	EXCESS PCT.	DOMESTIC PRODUCTION	IMPORTS	DOMESTIC DEMAND	EXPORTS	STOCKS NOV. 30§
1938	521,844,000	524,783,000	2,939,000	.5	521,765,000	79,000	480,008,000	44,775,000	75,277,000
Daily average	1,562,000	1,571,000	.....	....	1,562,000	236	1,404,000	134,000	.....
1937	524,189,000	515,751,000	*8,438,000	*1.6	524,045,000	144,000	479,887,000	35,864,000	75,775,000
Daily average	1,569,000	1,544,000	.....	....	1,569,000	431	1,433,000	107,000	.....
Increase, 1938	†2,345,000	9,032,000	.....	....	†2,280,000	†65,000	121,000	8,911,000	†498,000
	†0.4%	1.7%	.....	....	†0.4%	†45%	0.2%	24.8%	†0.6%
Kerosene									
1938	58,841,000	56,248,000	*2,593,000	*4.4	58,841,000	.....	49,538,000	6,710,000	9,676,000
1937	59,499,000	56,775,000	*2,724,000	*4.5	59,499,000	.....	48,552,000	8,223,000	8,357,000
Increase, 1938	†658,000	†527,000	.....	....	†658,000	.....	986,000	†1,513,000	1,319,000
	†1.1%	†0.9%	.....	....	†1.1%	.....	2.0%	†18.4%	15.7%
Gas Oil and Residual Fuel Oil¶									
1938	426,817,000	407,252,000	*19,565,000	*4.8	407,676,000	19,141,000	363,771,000	43,481,000	133,638,000
1937	438,736,000	441,306,000	2,570,000	0 6	418,169,000	20,567,000	398,865,000	42,441,000	120,077,000
Increase, 1938	†11,919,000	†34,054,000	.....	....	†10,493,000	†1,426,000	†35,094,000	1,040,000	13,561,000
	†2.7%	†7.7%	.....	....	†2.5%	†6.9%	†8.8%	2.5%	11.3%
Gas Oil and Distillate Fuels									
1938	137,901,000	128,398,000	*9,503,000	*7.4	137,901,000	.....	100,908,000	27,490,000	32,069,000
1937	133,160,000	129,121,000	*4,039,000	*3.1	133,143,000	17,000	101,013,000	28,108,000	26,852,000
Increase, 1938	4,741,000	†723,000	.....	...	4,758,000	.....	†105,000	†618,000	5,217,000
	3.5%	†.5%	.....	....	3.5%	.....	†.1%	†2.2%	19.4%
Residual Fuel Oils									
1938	298,916,000	278,854,000	*20,062,000	*7.2	279,775,000	19,141,000	262,863,000	15,991,000	101,569,000
1937	321,174,000	312,185,000	*8,989,000	*2.8	300,607,000	20,567,000	297,852,000	14,333,000	93,225,000
Increase, 1938	†22,258,000	†33,331,000	.....	....	†20,832,000	†1,426,000	†34,989,000	1,658,000	8,344,000
	†6.9%	†10.7%	.....	....	†6.9%	†6.9%	†11.7%	11.5%	8.9%
Lubricating Oils									
1938	28,442,000	28,143,000	*299,000	*1.0	28,442,000	.....	19,417,000	8,726,000	7,817,000
1937	32,385,000	31,966,000	*419,000	*1.3	32,385,000	.....	21,828,000	10,138,000	6,907,000
Increase, 1938	†3,943,000	†3,823,000	.....	....	†3,943,000	.....	†2,411,000	†1,412,000	910,000
	†12.2%	†11.9%	.....	....	†12.2%	.....	†11.0%	†13.9%	†13.2%
Petroleum Wax (Lbs.)									
1938	427,385,000	440,605,000	13,220,000	3	399,280,000	28,105,000	260,997,000	179,608,000	131,772,000
1937	509,886,000	485,453,000	*24,433,000	*5	478,520,000	31,366,000	275,665,000	209,788,000	139,867,000
Increase, 1938	†82,501,000	†44,848,000	.....	....	†79,240,000	†3,261,000	†14,668,000	†30,180,000	†8,095,000
	†16.1%	†9.2%	.....	....	†16.5%	†10.4%	†5.3%	†14.3%	†5.7%

*Excess supply. †Decrease. ‡Crude oil only. §Includes finished and unfinished refinery gasoline and natural gasolines. ¶Gas oil and fuel oil equals gas oil and distillate fuels plus residual fuel oils. Note: Total supply equals domestic production plus imports. Total demand equals domestic demand plus exports. Data on demand for refined products are based on refinery shipments. ‖Does not include 16,765 bbls. of heavy oils in California. Comparable figures for November 30, 1937, not available.

Crude Oil Run to Stills and Total All Oils (Bbls.)

11 MONTHS—	TOTAL IMPORTS§	TOTAL EXPORTS§	TOTAL CRUDE TO STILLS	PER CENT YIELD GASOLINE‡	NATURAL GASOLINE PRODUCTION	TOTAL SUPPLY ALL OILS*	TOTAL DEMAND ALL OILS*	STOCKS ALL OILS NOV. 30*
1938	48,782,000	177,785,000	1,067,051,000	45.0	45,972,000	1,207,234,000	1,208,186,000	563,034,000
Daily average	143,000	532,000	3,194,000	...	138,000	3,614,000	3,617,000	.....
1937	51,950,000	160,647,000	1,085,077,000	44.0	44,819,000	1,272,339,000	1,228,854,000	562,714,000
Daily average	152,000	481,000	3,249,000	...	134,000	3,809,000	3,679,000	.....
Increase, 1938	†3,168,000	17,138,000	†18,026,000	...	1,153,000	†65,105,000	†20,668,000	320,000
	†6.1%	10.6%	†1.6%	...	2.5%	†5.1%	†1.5%	.06%

*Total all oils includes crude and refined products, natural gasoline and benzol. Stocks November 30, 1938, represented 156 days' supply which compared to 153 days on same date in 1937. †Decrease. ‡Does not include natural gasoline blended at refineries. §Includes crude oil and refinery products. In case of imports includes receipts in bond and for domestic use. All data based on Bureau of Mines reports.

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Refining and Marketing Practices Committee Appointed by I.P.A.A.

Application of available legal methods to correct practices which have a depressing effect upon the price of crude oil and on market outlets is sought by the Independent Petroleum Association of America, Charles F. Roeser, president, said, in announcing appointment of the association's refining and marketing practices committee, called for by the association's special study committee of thirty-six. The new committee consists of Mr. Roeser, chairman; John M. Lovejoy, New York, president, Seaboard Oil Corp.; Paul G. Blazer, Ashland, Ky., Ashland Refining Co.; Walter A. Jones, Pittsburgh, Pa., vice president, Plymouth Oil Co. and B. L. Majewski, Chicago, vice president, Deep Rock Oil Corp.

This committee has three principal duties. First, to expedite approval by the Federal Trade Commission of the code of fair competition submitted by the industry. This code, drafted in 1935 shortly after the U. S. Supreme Court invalidated the National Recovery Act, has lain dormant in the Trade Commission's files. Should the committee fail to obtain prompt approval it will ascertain what objections have been made to the code in its present form, either by the Department of Justice or the trade commission.

Secondly, the committee will ascertain the cost and time required to make a study of the oil industry, from refinery to consumer, in the refining and marketing branches and to determine the effect of practices in these divisions upon the producing division. Such a survey, if made, would be by an agency outside the oil industry.

The third duty of this committee is to find out whether it is lawful and feasible to require all integrated companies listed and reporting to the Securities and Exchange Commission to split up their annual statements to cover separately producing, refining, marketing and transportation.

"We regard each of the three assignments as of the highest importance," said Mr. Roeser. "Conditions in the industry are unsound, although a beautiful picture is presented statistically.

"The current reports are bad. They have been for some time. Despite the splendid job which the producers, cooperating with the state regulatory bodies, the Interstate Oil Compact Commission and the federal agencies exercising certain statutory duties, have done; despite the results obtained in effecting real conservation of oil and gas, the position of the independent producer has grown worse. Supply and demand are not merely in balance, supply is below demand, as evidenced by the withdrawals of crude from storage. There is no avoidable physical waste of oil and gas today.

"In numerous ways the producer has put his house in order. He should have as his reward a reasonable profit and an unobstructed road to the fulfillment of his program of supplying the nation with enough oil for its needs, at reasonable price, and the finding of adequate reserves for the future.

"This condition of tranquility does not prevail. We believe that the ills of today—subnormal price for crude and lack of market in many areas for the full amount of crude oil which conservation authorities fix as the proper amount to be produced—are traceable to bad practices in the marketing division.

"Our casual investigation has revealed a condition in that branch that is comparable with the conditions in 1934 when "hot" oil was wrecking the industry. There is no "hot" oil today but the pressure that has been put upon refiners has forced their quotations downward. Most of the refiners who have yielded to this pressure have, we believe, done so reluctantly; nevertheless their prices to their marketing customers have gone down.

"The result has been a succession of body blows to the producer and to the entire conservation policy so carefully built up and so spiritedly urged by public officials. The refiner, holding his gallonage position by reducing his wholesale price, invariably arrived at the place where he dropped the price of crude or turned from his customary fields of supply to those of lower cost production. 'Selective buying' is the term used to describe the latter. Its meaning is simply the skimming of the cream. The areas of small production per well, constituting the greater part of the nation's reserves, are the sufferers. Some such areas actually face abandonment today.

"At this time, we believe correction can be brought about within the industry without effect upon the consuming public. The work which our new refining and marketing practices committee is starting should give definite and specific answers as to what is wrong."

Petroleum Situation Analyzed by A.P.I.

The petroleum industry entered 1939 not far from a basically sound condition, and achievement of a measure of stability during the year is possible if the industry keeps its operations in line with economic requirements, according to "An Analysis of the Petroleum Situation" to be published this week in the American Petroleum Institute's "Quarterly".

The analysis, prepared by Fred Van Covern, director of the institute's department of statistics, points out that the industry's statistical position, in many respects strong, is offset by a weak economic situation, and that continuance of this "zone of confusion" is dependent "upon whether or not the industry consolidates the gains that could ensue from its present fairly well liquidated position and to what extent gasoline inventories are built up during the present winter season."

Mr. Van Covern expresses the opinion that there will be a moderate increase in the consumption of motor fuel during the present winter and in 1939, but warns that the overall gain will not be such as to justify the continuance of refinery operation with crude oil run to stills at a rate which, during the last quarter of 1938, "averaged approximately 100,000 bbls. per day greater than runs to stills for the winter period indicate as economically desirable." He suggests that refiners would find it "good operating practice" to build up stocks of light fuel oils in the summer, when meeting the peak demand for motor fuel, "thereby making it unnecessary to produce them as currently required with the resultant uneconomically large production of gasoline" during the winter.

Finished and unfinished gasoline inventories are reported to have been less at the end of 1938 than at the close of 1937, and economic requirements are estimated as 80,000,000 bbls. for March 31, 1939, as compared with 92,000,000 bbls. actually in storage on March 31, 1938. On the other hand, Mr. Van Covern states, light fuel oil inventories in the area east of California are somewhat higher than a year ago and readily available to the major furnace oil marketing area.

"This additional inventory of light fuel," he adds, "will make it unnecessary for the industry, in the area referred to, to produce so large a portion of this winter's light fuel oil demand, thereby eliminating the production of the gasoline incident to the manufacture of that much furnace oil."

Mr. Van Covern suggests that the increasing availability to the industry of newly-developed refining processes incorporating greater flexibility as to yields promises ultimately to assure a solution of the problem created by the complete lack of relationship between demand for light fuel oil and gasoline and the normal yields of each from a barrel of crude oil.

Reconsideration of the amount of crude oil reserves carried above ground has been necessitated by increased drilling of wells, greater potentialities to produce, and a gain in known reserves, Director Van Covern observes. He reports crude oil inventories at around 270,000,000 bbls., which is the lowest level since 1922, and suggests that, in the light of new developments, "minimum economic requirements of crude oil inventories at this time and under present conditions approximate 225,000,000 bbls., as compared with actual inventories on December 1, and more recently, of 270,000,000 bbls." This, and other, information developed at the December hearing before the Texas Railroad Commission is said to indicate that liquidation resulting from withdrawal from crude oil stocks is either complete, temporarily at an end, or that stocks were increasing, in all important areas except Oklahoma and Texas, with evidence that even in these areas only slight reductions were contemplated during the winter.

"The present minimum economic requirements of crude oil in operating facilities and as a contingent reserve above ground, previously indicated at 225,000,000 bbls., is, of course, a condition which will probably never be realized at any given date," Mr. Van Covern writes. "As in the case of gasoline it is at best a theoretical minimum economic figure and it would appear that actual operating levels, while tending to recede toward that figure over a period of time will, under the varying conditions of supply and demand and other current necessities and contingencies, assume an actual operating level at a somewhat higher point.

"I think it is not only desirable but entirely possible," he explains, "that calculations could be made which would be sufficiently accurate to allow the setting of production allowables for each of two three-month periods during the winter season from September 30 to the following March 31, and each of three two-month periods during the high-consuming season from March 31 to the following September 30."

Mid-Continent Strike Remains Unchanged

The situation remains at a standstill in the strike called in Oklahoma about a month ago against Mid-Continent Petroleum Corp. by the Oil Workers Union, an affiliate of C.I.O. During the week it was reported that W. A. Murphy, state labor commissioner, is endeavoring to have both sides present their cases before the State Board of Arbitration and Conciliation. The company continues to decline to accept this proposal on the ground that the union has already taken steps to bring the dispute before the National Labor Relations Board since complaint was filed with this federal authority last August. The position of the company is that unwarranted confusion will result if issues are discussed with another board before they are presented at a formal hearing to be held by N.L.R.B. N.L.R.B. representatives continue their efforts to have the dispute settled before a formal hearing may be necessary. The National Guard, on duty in the vicinity of the company's refinery in West Tulsa, has not extended the zone under martial law beyond the limits originally established early in the strike. Provision has been made for a certain amount of picketing inside the lines maintained by sentries.

THE MARKETS*

CRUDE OIL: *For the first time in several weeks no adjustments were reported the past week in posted crude oil schedules. Illinois, the weakest point in the crude price structure at this time, continued to expand its total production despite a substantial decline in old pools. The decline in older fields was due to curtailment of purchases by the largest buyer.*

REFINERY: *Natural gasolines decline one-fourth cent daily for three days. No improvement in refinery gasolines for export or domestic movement reported in any area. A better movement due to lower temperatures is aiding furnace oils and heavy oils in the East but price concessions are reported in the Mid-Continent and Middle West.*

TANK-WAGON AND POSTED DEALER: *A half-dozen reductions in gasoline prices at scattered points reflecting local conditions.*

FINANCIAL: *There was no sustained improvement in oil stocks last week following the severe decline of the previous week, and averages were slightly lower at the close. Average of 30 representative stocks for week ending January 14: High, 29.19; low, 28.17; close, 28.59. Week ending January 7: High, 29.89; low, 28.88; close, 29.09.*

**Detailed information in market section.*

Deeper Drilling in Arkansas Disclosing New Reserves

By GEORGE WEBER

The State of Arkansas has seen a remarkable revival in the development of new oil reserves during the past two years. With drilling operations dwindling after the Smackover boom subsided, the state became dormant over a period of several years. Production of the settled fields also declined, so that in January, 1937, the daily average production for the entire state was only 23,952 bbls.

A trend in drilling to deeper horizons in the South Arkansas counties of Union and Columbia, which got under way early in 1937, however, brought the state into the spotlight, where it stands today, with a number of new discoveries and extensive wildcatting programs yet to be carried out.

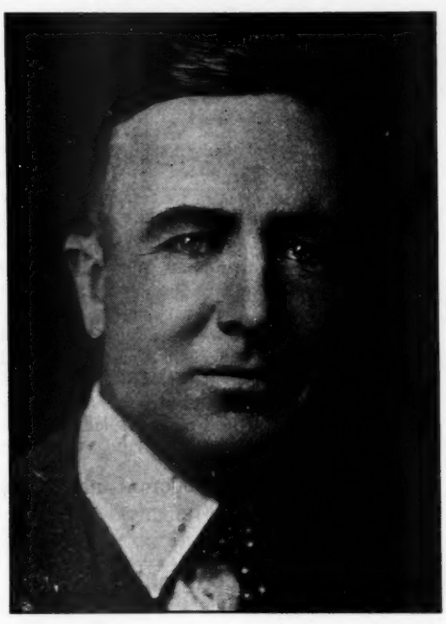
The progress made in Arkansas, both as regards new field developments and new methods of production and conservation, is ably reported in a discussion recently released by the state Board of Conservation. This survey gives a concise picture of field activities, investment and production costs, reserves and controlled production pointing to greater conservation in the flush fields.

"Arkansas' position in the oil industry has altered considerably since the beginning of 1937," states the report. "Indeed, more so than a comparison of the relative producing position of the oil states would indicate. At the end of January, 1937, Arkansas occupied tenth place in the list of 22 oil-producing states. At the end of November, 1938, we find Arkansas in eighth place.

"Crude oil production at the end of January, 1937, had shrunk to 23,952 bbls. daily; and then, in the peak month of September, 1938, it rose to 56,452 bbls. daily. That is an increase of 136 per cent. Drilling and exploration have taken on new life, naturally. There were no wells completed as producers in January, 1937, and only 29 in the entire year of 1936, 42 in 1935, and 35 in 1934. Arkansas was in the doldrums from an oil standpoint

"Conservation, both concepts and duties, have changed also. The work connected with gas-oil ratio, production, bottom-hole pressure tests, supervision of plugging operations, well locations and minimizing the waste caused by fires, leaks, and blowouts has increased correspondingly with the increase in field activity."

The progress in discovery of new fields, and the



O. C. Bailey, chairman, Arkansas Board of Conservation

corresponding gain in production, is illustrated in the accompanying graph. The settled production from fields such as Smackover, El Dorado, Champagnolle, etc., is represented by the cross-hatched area, which remains essentially the same over the two-year period represented on the chart. The gain in production, which is shown in the superimposed shaded area, is that of new production, and the decline toward the end of 1938 is due primarily to closer control of production rather than to a natural decline in flow.

With regard to this production chart, the board states: "It is interesting to note that of the 16,435,712 bbls. of oil produced from January 1, 1938, to December 1, 1938, 8,206,344 bbls. originated in fields discovered after March, 1937. This means that approximately 50 per cent was produced from new fields and 50 per cent from settled fields. The production from the settled fields, or fields producing prior to 1937, declined about 12 per cent over the same period."

"The Board of Conservation issued 477 permits to drill and 176 permits to plug from January 1, 1937, to November 31, 1938. That is, a permit to drill every day and a half and one to plug every four days. The wells drilled and plugged under these permits were supervised in accordance with the present law.

"The industry completed 376 wells over this same period, 278 being producers. This would indicate that 98, or 26 per cent, were failures.

"Disregarding the fact that 98 wells were total losses, let us make some approximations as to the amount of money expended on drilling wells in Arkansas during the period covered by this discussion.

Drilling Costs

"We have on file the results of a survey directed by the Board of Conservation during this past summer concerning oil-well acreage, reserve and producing data in each of the producing fields of the state. The average cost of drilling each well in each of these fields was also determined from questionnaires and is shown in Table 1.

TABLE 1—COST OF DRILLING—OLD FIELDS

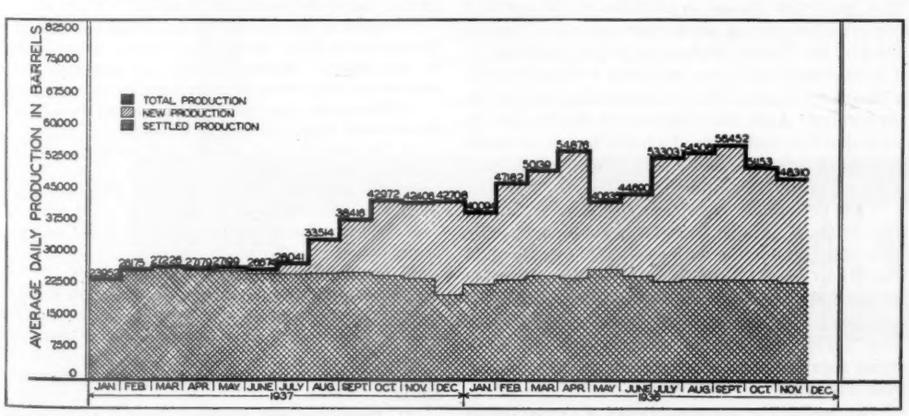
Field—	Depth in feet (Sub-sea)	Cost*
Champagnolle	2,800-3,350	$18,000.00
El Dorado	2,000-3,400	10,000.00
Garland City	2,800-4,200	20,000.00
Irma	1,200	8,000.00
Lisbon	2,100	10,000.00
Smackover	2,000-2,800	15,500.00
Snow Hill	4,900	50,000.00
Stephens	1,500-2,300	12,000.00
Troy	1,250-2,100	18,000.00
Urbana	3,600	15,000.00
NEW FIELDS†		
Buckner	7,300	$55,000.00
Champagnolle (new)	3,000-3,300	20,000.00
Magnolia	7,600	60,000.00
Rodessa	5,600-6,300	40,000.00
Schuler:		
Jones Sand	7,500	75,000.00
Reynolds	7,600-7,700	75,000.00
Morgan	5,500-5,900	55,000.00
Village	7,000-7,500	60,000.00

*Round figures, not including completion and equipping. Does not include Atlanta nor Falcon fields.
†Coring operations, formation testing, drill stem tests, have increased cost for like depth.

TABLE 2

Depth bracket	Wells	Cost of well	Total
1,000-2,000 feet	22	$ 8,000.00	$ 176,000.00
2,000-4,000 feet	72	40,000.00	2,880,000.00
4,000-6,000 feet	30	50,000.00	1,500,000.00
6,000-8,000 feet	252	60,000.00	15,120,000.00
Total	376		$19,676,000.00

To arrive at the money expended in drilling those wells completed during the two-year period, the board referred to the logs of each completed well, and classified the completions into different



Arkansas daily average production by months

depth brackets, with the cost estimated for each depth range. The resulting total estimation of drilling costs in the state is shown in Table 2.

"The final approximation of $19,676,000 is a tidy sum. In fact, it represents an investment of $29,455.09 per day as an average from February 1, 1937, to December 1, 1938. This could be appreciably raised if the amount of money paid out for leases, bonuses to land owners, geophysical work, etc., could be estimated.

Cumulative Production

The board has calculated the total amount of crude oil produced and saved in Arkansas, by fields, to December 1, 1938. There is no method for estimating the millions of barrels of oil which escaped from hastily constructed earthen pits during the Smackover boom days.

TABLE 3—CUMULATIVE PRODUCTION OF CRUDE OIL—BY FIELDS—OLD FIELDS

Field and discovery date—	Prod. to Dec. 1, 1938
Champagnolle, June 22, 1927	12,794,449
El Dorado, Jan. 10, 1921	54,483,403
Garland City, July 30, 1930	1,004,631
Irma, Oct. 17, 1921	5,321,339
Lisbon, Dec. 31, 1925	5,401,013
Smackover, July 31, 1922	345,778,371
Stephens, June 8, 1922	5,654,003
Urbana, Dec. 19, 1929	3,208,856
Others	4,077,461
NEW FIELDS	
Buckner, Nov. 30, 1937	306,000
Magnolia, Feb. 23, 1938	87,466
Rodessa, June 22, 1937	3,332,231
Schuler:	
Jones, Sept. 17, 1937	5,194,020
Reynolds, Oct. 22, 1937	331,199
Morgan, April 6, 1937	1,318,291
Village, May 24, 1938	52,620

*Figures checked by C. H. Geiger, Smackover, Ark.

Turning its attention to the subject of remaining recoverable reserves of crude oil in Arkansas, the board gives the results of carefully computed figures. "There are several methods in use for estimating reserves of oil. The board engineers decided to use two, the percentage-decline curve method for the old fields and the saturation method for the new fields. While it is felt that the latter method is far more accurate under controlled production, it is necessary to use the first method, due to a paucity of information concerning the older fields."

TABLE 4—ARKANSAS CRUDE OIL RESERVES—OLD FIELDS

(Estimated as of January 1, 1939)

Field and county—	Wells	Proven acreage	Bbls. est. reserves
Champagnolle, Union	73	3,000	10,000,000
El Dorado, Union	271	9,000	36,500,000
Garland City, Miller	20	300	400,000
Irma, Nevada	63	640	1,100,000
Lisbon, Union	143	2,000	600,000
Smackover, Ouachita, Union	1,728	26,000	60,500,000
Snow Hill, Ouachita	5	100	100,000
Stephens, Columbia	191	2,300	1,525,000
Troy, Nevada	17	300	1,825,000
Urbana, Union	34	750	2,500,000
Others, various	10	150	250,000
NEW FIELDS			
Buckner, Columbia	10	1,000	*4,000,000
Champagnolle, Union (new)	6	50	*62,500
Magnolia, Columbia	7	500	*9,400,000
Rodessa, Miller	110	2,250	7,500,000
Schuler:			
Jones, Union	115	3,060	40,500,000
Reynolds, Union	12	1,250	5,000,000
Morgan, Union	11	110	4,500,000
Village, Columbia	4	250	*1,250,000

*Process of development—only proven productive area considered.

"Totaling the foregoing, we find 2,830 wells, 53,010 proven acres, and 187,512,500 bbls. of recoverable reserves. Of the total reserves, it is stated that 2,555 wells, 44,540 proven acres, and 115,300,000 bbls. belong to old fields, while 275 wells, 8,470 proven acres, and 72,212,500 bbls. belong to new fields. Converting those statements to percentage figures, we have:

	Wells	Acreage	Reserves
Old fields	90	85	62
New fields	10	15	38

Production Costs

A careful study has been made by the board, of the cost of producing crude oil in all fields of the state. The survey was commenced early in September and completed on November 1, and the data gathered represents cost figures for the month of July, 1938. The survey was two-fold; first, oil-well, acreage, reserve and producing data; second, cost of producing crude petroleum in each of the common sources of supply.

In discussing this data, the board states: "We feel that the cost information (regarding stripper fields) is more representative of the small independent operator than the large integrated one. Production is becoming more and more difficult and expensive in these stripper fields. As in the Smackover field where it is reported that corrosion on subsurface equipment is becoming unusually severe, there is a growing practice among the larger companies to dispose of their holdings in these fields either by sale or abandonment."

TABLE 5—UNIT COST OF PRODUCTION—OLD FIELDS

(Not including interest on investment)

	Champagnolle	El Dorado	Lisbon	Garland	Nevada	Smackover	Stephens	Troy	Urbana
Operating expense	.441	.586	.578	.431	.519	.554	.602	.491	.422
Overhead and administration	.293	.158	.163	.125	.110	.095	.120	.140	.195
Development and exploration	014	.016	.018	.019	.008	.010	.015	.013	.011
Dry hole expense and losses	.047	.010	.006	.002	.005	.007	.001	.001	.005
Lease rentals	.019	.009	.005	.006	.010	.006	.002	.011	.001
Undeveloped leases	.004	.009	.008	.007	.006	.006	.005	.031	.003
Depletion	.097	.151	.183	.146	.065	.140	.123	.021	.149
Depreciation	.058	.027	.033	.041	.048	.038	.029	.034	.039
Miscellaneous	.008	.005	.005	.002	.005	.004	.004	.007	.008
Total cost	.981	.971	.999	.779	.776	.860	.901	.749	.833
Gas sales and miscellaneous	.032	.016	.004	.009	.002	.001	.010	.149	.013
Net cost	.949	.955	.995	.770	.774	.859	.890	.600	.820
Daily rate of production, bbls.	1,000	1,800	300	350	650	18,200	500	1,200	1,200

In discussing the new fields, the Rodessa field is set apart from the others due to the fact that it is in a transitory stage. "Unfortunately, it is practically impossible to arrive at a satisfactory cost information on these new fields since they are all in the process of development and, with the exception of Schuler, none has been defined. We are simply averaging the figures furnished us from Buckner, Magnolia, Schuler and Village."

TABLE 6—UNIT COST OF PRODUCTION—NEW FIELDS

(Not including cost of investment)

	Rodessa	*Others
Operating	.073	.029
Overhead and administrative	.023	.015
Development and exploration	...	†.012
Dry hole expense and losses		.001
Lease rentals	.008	.003
Undeveloped leases		.006
Depletion	.221	.085
Depreciation on equipment	.074	.089
Amortization of intangible development cost	.220	.011
Abandonment, miscellaneous	.002	.005
Total cost	.621	.256
Gas sales and miscellaneous	.048	.050
Net cost	.573	.206
Daily rate of production, 29,000 bbls.		

*Buckner, Magnolia, Schuler, Village.
†Questionable.

The importance of applying conservation measures to the control of the state's flush production should be stressed in considering the economic balance of production between old and new fields. This important factor, in addition to the primary conservation aims of production control, is emphasized by the board. "Referring to the cost data . . . it is indicated that in the old fields it costs 88 cents a barrel to produce oil—not including the cost of investment. Also, from this same data it can be seen that the cost of producing a barrel of crude petroleum oil in the new fields is about 21 cents—without cost of investment.

"The new fields are operating under voluntary restriction of production. They could quadruple their daily production with ease. What then would happen to the 115,300,000 barrels of recoverable oil, the 1,784 wage earners, and southern Arkansas' economy? We have a sample when the tremendous East Texas field glutted the market—and other states received the same treatment when Smackover was wild."

"In closing, the Arkansas Board of Conservation has this to say about controlled production; to endure, any method of controlled production must be based on four fundamental premises: (1) equity, or the opportunity for each operator to recover his fair shade of the oil in the field where his wells are located; (2) parity, or the fair distribution of the market demand as between fields; (3) the greatest ultimate recovery, or the adoption of production principles which will insure the eventual production of every possible barrel of a limited and irreplaceable natural resource; (4) the most efficient use of the natural reservoir energy, or simply the best utilization of forces which nature has placed at our disposal for the production of oil and gas.

"Each and every one of these four factors are more or less dependent on one another. Taken altogether, they mean a controlled production system which is based on sound engineering principles. The correct application of these principles guarantees the return to the state of the greatest value from its oil and gas resources. Unfortunately, it is no simple matter to put these factors into operation. The characteristics of fields and even wells within fields vary between wide limits in some instances. It requires the most careful study of all the factors which can be assembled to give a workable solution. Practical experience and scientific thought must work hand in hand. Both can help the other. The administrative forces of the state must so balance all factors that the greatest ultimate benefit will be derived by all concerned."

Arkansas Conservation

(Continued from Page 13)

nary meaning, shall mean "physical waste" as that term is generally understood in the oil and gas industry and it includes:

1. The inefficient, excessive or improper use or dissipation of reservoir energy; and the locating, spacing, drilling, equipping, operating or producing of any oil or gas wells in a manner which results, or tends to result, in reducing the quantity of oil or gas ultimately to be recovered from any pool in the state.

2. The inefficient storing of oil; the producing of oil from any pool in excess of reasonable market demand; and the locating, spacing, drilling, equipping, operating or producing of any oil or gas well or wells in a manner causing, or tending to cause, unnecessary or excessive surface loss or destruction of oil or gas.

3. Abuse of the correlative rights and opportunities of each owner of oil and gas in a common reservoir due to non-uniform, disproportionate, and unratable withdrawals causing undue drainage between tracts of land.

4. Producing oil or gas in such manner as to cause unnecessary water channeling or coning.

5. The operation of any oil well or wells with an inefficient gas-oil ratio.

6. The drowning with water of any stratum or part thereof capable of producing oil or gas.

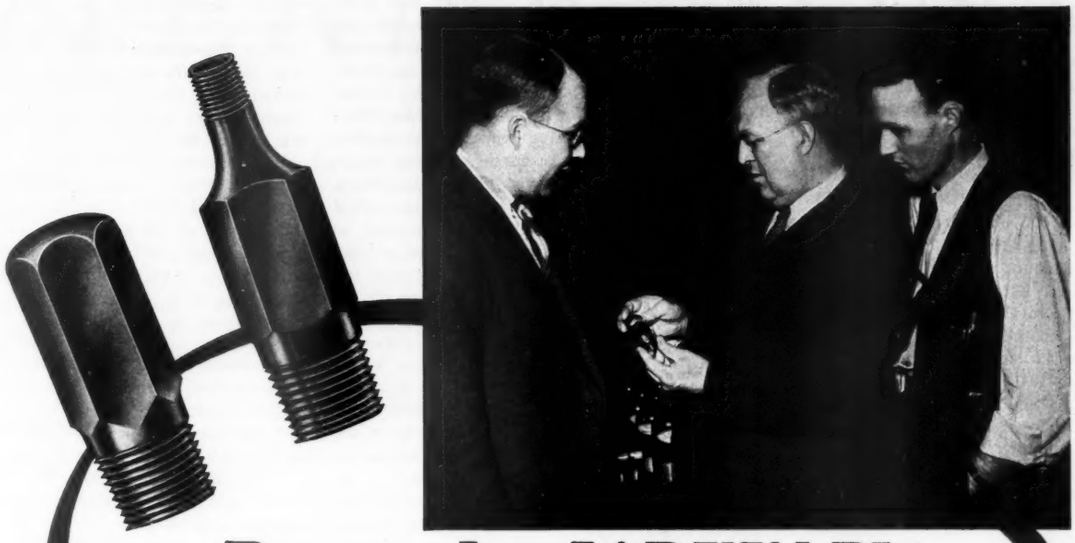
7. Underground waste, however caused and whether or not defined.

8. The creation of unnecessary fire hazards.

9. The escape into the open air, from a well producing both oil and gas, of gas in excess of the amount which is necessary in the efficient drilling or operation of the well.

10. The use of gas for the manufacture of carbon black.

11. Permitting gas produced from a gas well to escape into the air.



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1—Larkin Seamless Bull Plugs are pressed from NEW flat strip steel, cupped and drawn into plugs which have neither seams nor welds at side or end.

2—Larkin Seamless Swaged Nipples are forged from NEW Seamless full-weight pipe or casing.

3—Uniform length, shape and outline . . . ends faced square . . . perfect threads, beveled for easy starting . . . inside edges chamfered . . . rigid inspection.

4—Dependable and Leakproof! . . . Larkin fittings are actually stronger than the lines on which they are used.

5—Sufficient length to allow ample room for pipe tongs.

6—Label shows plainly the size and thread, for convenience of field men and warehouse men.

LARKIN PACKER COMPANY, INC., ST. LOUIS, U. S. A.

NEW HEXAGON SHAPE! In sizes one inch and smaller, Larkin Nipples and Bull Plugs can be furnished in the new Hexagon shape, at no extra cost.

LARKIN PACKER CO.

PERU

(Continued from Page 14)

plant owned by the operator and the products are sold in Peru.

Some miles further south is the Lobitos concession operated by the Lobitos Oilfields, an English concern. The concession comprises 141,140 acres and there are about 640 producing wells with an average daily production of about 7,400 bbls. Several good wells have been completed in the northern part of this field having an initial production of about 500 bbls. per day and have extended the producing area.

Adjoining on the south of Lobitos field is the La Brea and Parinas Estate fields operated by International Petroleum Co., Ltd., of Canada, and comprising an area of 411,310 acres.

Lobitos Oilfields Co. is developing the areas known locally as Lobitos, Restin, Cabo Blanco and El Alto. The first of these is about 15 miles north of Talara and the others are roughly 12 miles farther north. This company began operations in 1901 and obtained commercial production in 1906. The Restin area was opened in 1911 and drilling at Cabo Blanco on the Mancora plateau began in 1920.

Most of the wells in this field are less than 2,000 feet deep and produce from a formation known as Terebratula, lower Caverno of Eocene age. The productive rock is sandstone. There is also a smaller number of wells between 3,000 and 6,000 feet in depth which produce the greater part of the oil in this field. The shallower wells are drilled with cable tools mostly, while the rotary is used for the deeper production.

Different parts of the Lobitos field are connected with a road system and about 25 miles of light railway connects the field at Lobitos with El Alto, which is up the coast to the north. Most of the production is exported to the company's refinery at Ellesmere Port, England, with part going to Argentina direct and to some other consuming countries.

The International Petroleum Co., Ltd., operating the La Brea and Parinas fields, has a completely rounded-out organization carrying on exploring, producing and refining operations.

Complicated Problems

Exploration in this area involves the solution of some complicated problems in geology. The oil is produced from rocks chiefly of Eocene age, with the Parinas sandstone being the most important of the four commercial horizons. Structurally, the field is an intricate arrangement of normal fault blocks. The relative displacement of the same formations from block to block varies from a few hundred to several thousand feet. In addition, the sands vary greatly in thickness over short distances. The surface geology is in large part obscured by a mantle of recent material. More or less tightly-sealed separate reservoirs are the rule rather than the exception. Correlations under such conditions can be reliably made only by using microfauna or other data over relatively short distances. Well-grounded conclusions regarding the productivity or nonproductivity of acreage usually require drilling a test well to the prospective horizon.

In 1938 the company drilled more than 140,000 feet of new hole. Fifty-four wells have been completed with an average depth of 2,500 feet. To date more than 3,000 wells have been drilled, of which 1,940 are now classed as producers. Portable and standard cable tool rigs are used for shallow drilling. Standard type or portable rotary drilling rigs are being used for deeper drilling or where high pressures are expected.

Many wells in the La Brea field are from 20 to 40 years old. They are pumped economically from central pumping stations of the slow-motion type, with 20 or more wells to a station.

In some sections, where structural and other conditions are suitable, pressure maintenance by returning gas to the producing formation is being practiced. Wells in such areas still flow naturally. In one or two fault blocks this practice is outstandingly successful with several wells, flowing steadily for nearly five years, still producing over 100 bbls. per day. In these areas the gas is put through one of the seven gas plants, recompressed and returned to the formation through a group of injection wells located on the crest of the structure. By keeping the pressure on the fluid in the reservoir, the dissolved gas in the oil is kept in solution and the fluidity of the oil is preserved, with the result that the ultimate recovery and production rate are both increased.

In two or three partly depleted blocks, waterflooding is being given a serious trial by injection of water in down-dip wells that had become nearly exhausted producers. Favorable results are hoped for because of the general absence in the field of a natural water drive.

The crude oil has a mixed base and as produced averages 37° A.P.I. gravity. Some is exported in the crude state, mainly to North American and European markets, and the remainder is refined at the company's refinery at Talara. Refined products not only go into the Peruvian market, but other South American countries as well.

Exploration by Government

Exploration for additional oil fields is being carried on in several areas. South and east of the Zorritos property in the northern part of Peru the government is drilling tests on the National Reserve. Six wells have been completed or are drilling not far from a camp established at Villar. Of these tests, one found gas at 2,619 feet and one was dry at 1,415 feet. It is reported three standard and two rotary rigs are being used.

Considerable exploratory work is being carried on by both the Lobitos and International companies to extend the producing areas, and to locate others. The complex nature of the structure makes such drilling hazardous and adds very much to the drilling that has to be done in this connection.

In the Pirin region north of Lake Titicaca the government is making a geological study of the national reserve. Here in 1906-1908, Titicaca Oil Co. drilled 10 wells to depths of 800 feet or less and got some shows of oil and gas. During 1917-1919 its successor, Sociedad de Petroleos Espana, drilled five more wells of which three were said to be producers. A really commercial field has not been found.

In eastern Peru a test well is being drilled by Cia. de Petroleo Ganso Azul on a 50,000-acre concession at the confluence of the Pachitea and Ucayali rivers. This concern took over the interests of Selden Breck Co. The well is more than 1,600 feet deep and is reported to have had a show of oil at about 1,000 feet. Drilling is being done by an American contractor with a new rotary outfit. This rig was brought up the Amazon and Ucayali rivers by boat from the eastern coast of South America.

The Amazon is not the only connecting link with the outside world. Only a few miles from the well site in Masisea is the junction point where the Peruvian National Air Services hydroplanes from Iquitos meet their land planes from San Ramon, thus affording air transportation to and from the well. Pacalpa will soon be connected to Huanuco by a new road now being constructed.

Senor Ricardo Barreda Laos filed on approximately 350,000 acres of new leases in 10 rectangular tracts in the general vicinity of Contemana and Yurimaguas a short time ago. Another tract of 30,000 acres has been denounced by Senor Mario Matteucci.

Peru is divided by the Andes Mountains into three distinct zones. The coast, bordering the Pacific Ocean and limited on the east by the Andes; the Sierra or highlands, between the two branches of the Cordillera; and the lowlands, "montana" or region of the forests, on the eastern side of the range.

The climate in each zone is distinctly different. The elysian winds predominate in the oriental zone of South America and travel over the flat portion of the continent charged with moisture absorbed from the Atlantic. On reaching the Andes, they have to expand to overcome the obstacle and in so doing part of the latent heat is absorbed condensing almost all of the water vapor in the clouds and precipitating it in the form of torrential rains which fall on the eastern slope of the Andes Mountains. The remaining moisture in the clouds is condensed in the cold highlands and falls as snow or sleet. The winds from the east that do reach the Pacific slope are dry.

The coast is therefore a narrow band of arid plains interspersed here and there by cultivated valleys, nourished by a few rivers descending from the Cordillera embanked in the stirrups of the Andes and flowing into the Pacific Ocean. The climate on the west coast of Peru is mild because of these reasons and also because the Humboldt current also contributes to lack of rain on that coast as its low temperature does not permit the evaporation of water, so the mild winds from the south are also dry.

Obituaries

C. M. WEATHERWAX, 60, San Francisco, extensively interested in central and southern California oil properties, died in New York January 13 from injuries received when beaten and robbed. He was in New York with his wife on a semiannual trip which had been their custom for 25 years.

W. D. CRAIG, 76, organizer and first president of Queen City Oil Co., and at one time active in the Kevin-Sunburst field, died recently at Regina, Saskatchewan.

PATRICK LENNAN, 77, for many years a driller in Canadian and foreign fields, died at Petrolia, Ontario.

ARTHUR D. ROBINSON, 56, independent producer, recently passed away at his home in Dallas, Tex., of heart trouble.

C. E. ELLZEY, 45, pioneer oil operator of Shreveport, La., died recently. He was vice president of Hannibal Oil Co., active in Texas and Illinois fields.

C. M. HOSS, an Oklahoma pioneer, died in Albuquerque, N. M., last week. Around 1900 he developed the gas pool near Lawton, Okla. He was also active in the development of Osage County.

DELL H. WOLFE, 52, director of purchases of Parkersburg Rig & Reel Co., died January 10. He had been with the company since 1912.

CHARLES F. LEECH, 77, superintendent of the industrial relations division of Indian Territory Illuminating Oil Co., died at Bartlesville, Okla., January 14. An employe of I.T.I.O. since 1909, he had been in his present position 10 years. He was with the Department of the Interior from 1905 to 1909, assigned to the Osage Indian Nation as first oil and gas inspector.

INTERNATIONAL

Production in Iran Showed Increase During October

Crude oil production from Iran rallied in October and output for the month was reported by Anglo-Iranian Oil Co., the only producer in the country, at 6,981,435 bbls. October production was 1,427,850 bbls. higher than September yield and was 60,120 bbls. higher than reported for the same month in 1937. During the first 10 months of 1938 Iran crude oil production totaled 63,073,395 bbls., compared to 63,862,470 bbls. for the same 1937 period.

American Companies Clear Titles in the Dominican Republic

Titles to approximately 3,000,000 acres of concessions and exploratory grants have been cleared by several American oil companies and individuals in the Dominican Republic through a series of court proceedings in that country. The Dominican Seaboard Petroleum Co. (Compania Seaboard Dominicana de Petroleo C. por A.), headed by John M. Lovejoy of New York, is the most extensively interested company in the republic. B. H. Faulkner of New York is treasurer, secretary and a director of Dominican Seaboard. Other directors are Harold Bishop, Sumner Pike and Harry A. Richards, all of New York and J. Whitney Lewis, geologist, who represents the company in residence.

Included in the Dominican Seaboard holdings are the Higuerito. Monte Cristi and El Commendor concessions. Mr. Bishop individually holds the Yagüate concession which is contiguous to the Dominican Seaboard property.

Renewed Pressure on Washington in Mexican Case

Renewed pressure is being applied to the United States Department of State urging settlement of the issue between American and British companies and Mexico involving seizure of the privately owned properties 10 months ago. Meanwhile, the first official disclosure of production and petroleum export figures by the Mexican Government since it confiscated the privately-owned oil properties March 18, 1938, came at the end of last week. A private dispatch from Mexico City said that official statistics on Mexican oil developments during August revealed that Great Britain, Japan and Germany were the biggest buyers. However, the amount exported to each was not disclosed.

The figures indicate that 1,373,201 bbls. were exported in August, an increase of 32.2 per cent over shipments in July. Total production for August was reported at 3,864,277 bbls., about 1,000,000 bbls. higher than in July and 1,060,000 bbls. above the output of August, 1937. The total eight-month production, however, was lower than that of 1937, which was 30,540,636 bbls., compared with 25,431,776 bbls. in 1938.

Observers interested in the Mexican oil confiscation case were watching Washington for first signs of activity by Secretary of State Hull who is understood to have stipulated that this situation become the first order of business after his return from the Pan-American conference at Lima, Peru. Secretary and Mrs. Hull returned to this country early last week.

In the Texas Legislature a resolution was considered demanding from the State Department a settlement for a "fair compensation" on the seized properties or for their immediate return to the owners.

The Texas Legislature resolution charges that German technicians have been placed in charge of the seized Mexican fields and goes ahead to say:

"Texas is particularly menaced by threat of foreign aggression as it borders Mexico for 900 miles, and it is the opinion of this body that immediate insistence by the State Department upon prompt and fair compensation for American properties seized by Mexico, or, in the alternative, the immediate return of such properties to their owners is the speediest and most certain way to preserve peace of America, and check Nazi and Fascist penetration at point of greatest danger to the United States."

Defense of Eastern States Petroleum Co.'s position as the only American importer of Mexican crude was made last week in a letter over the signature of Richard B. Kahle, president, addressed to members of the Texas Legislature. The letter was written for consideration in the legislature's deliberations over a proposal to levy a processing tax of $1 per barrel on all Mexican and other foreign crude oil refined in Texas.

Mr. Kahle wrote that the assumption is correct that the proposed tax is aimed primarily at Eastern States and said that a brief statement, therefore, of its commercial operations was in order. "Eastern States Petroleum Co.," wrote Mr. Kahle, "as an independent refining company, is engaged in refining for sale in the export trade exclusively. The crude oil from which the products are refined is purchased from the Mexican republic. None of the oil purchased from the Mexican republic comes from fields ever owned by American oil companies. It comes from fields owned by the Mexican republic prior to the oil expropriation decree of March, 1938.

"No drop of the oil or the products therefrom enter the domestic market. But for the revenue in wages and taxes to Texas, it might as well be refined in the Dutch West Indies or Iraq.

"The $1 a barrel processing tax on foreign crude refined in Texas will be no benefit to the economy of the oil industry and will be a loss to Texas as a whole.

"(*a*) It will destroy its Mexican export market.

"(*b*) It will bring in no revenue.

"(*c*) It will have a tendency to discourage employment in Texas."

Venezuelan Output Tapers Off Slightly During December

Daily average crude oil production in Venezuela tapered off slightly in December to 531,384 bbls., making a total output for the month of 16,472,894 bbls.

Losses were incurred by Lagunillas, which in the accompanying table now includes all Lake Maracaibo production by Lago Petroleum Corp. and Creole, Tia Juana, Mene Grande, Tarra, Cumarebo, Temblador, and El Mene. The declines in daily average by the fields listed above were slight in most instances. The outstanding increase was a gain of about 3,600 bbls. in the daily average output of the Quiriquire field in eastern Venezuela.

Preliminary figures indicate that Venezuela produced a daily average of approximately 521,000 bbls. throughout 1938, which is the highest on record for the country. But for declines during the final two months of the year the record output would have been in the vicinity of 194,000,000 bbls. as estimated during the early part of November. Later data indicated that the country's 1938 yield was about 190,200,000 bbls.

The new Bachaquero field, the most southern in the chain of pools on the east side of Lake Maracaibo, increased its importance last month, accounting for total output of 409,621 bbls., an average of 13,214 bbls. daily. This compares with yield of 304,068 bbls. in November, or 10,136 bbls. daily. The field is due to occupy a position of increasing importance during 1939 since Mene Grande Oil Co. is making preparations to develop its holdings along the lake shore line, which in turn will force Lago Petroleum Corp. to start operations on its lake bed property and probably will draw Venezuela Oil Concessions' program up to the lake front to protect against drainage.

VENEZUELA PRODUCTION
(By fields in barrels)

Field—	December 1938	December 1937	Daily average December 1938
Lagunillas	*8,234,020	7,897,752	265,614
Tia Juana	2,510,813	2,102,764	80,994
Quiriquire	2,179,649	2,189,503	70.311
La Rosa	980,079	2,285,077	31,615
Mene Grande	934,697	1,305,126	30,152
Tarra	471,147	402,906	15,198
Bachaquero	409,621	.....	13,214
Cumarebo	210,884	191,857	6,803
Pedernales	191,797	159,328	6,187
Temblador	169,429	.....	5,465
Concepcion	75,897	85,413	2,448
La Paz	53,246	88,690	1,718
El Mene	51,615	64,356	1,665
Total	16,472,894	16,772,772	531,384
Daily average, December, 1937			541,062
Total November, 1938	16,081,703		
Daily average, November, 1938	536.058		
(By companies)			
Venezuela Oil Conc.	5,751,119	5,360,686	185,520
Lago Petroleum Corp.	4,350,641	5,038,759	140,343
Standard of Venezuela	2.919.954	2.897.568	94,192
Mene Grande Oil Co.	1,941,000	1,665,000	62,613
Caribbean Petroleum Co.	934,697	1,305,126	30,152
Colon Development Co.	471,147	402.906	15,198
British Controlled	51,615	64,356	1,665
Northern Venezuela Petroleum	52,721	38,371	1,701
Total	16,472,894	16,772,772	531,384

*All Lago and Creole Lake Maracaibo production included in this figure.

Programs and Meetings

N.P.A. Department of Standards And Tests, Oil City Program

The program for the 1939 semi-annual meeting of the Department of Standards and Tests of the National Petroleum Association on January 26 has been announced by Russell R. Buckham, chief chemist, James B. Berry Sons Co. Inc., and chairman of the Oil City-Titusville host group.

The program arranged by Mr. Buckham includes a luncheon at noon and a dinner in the Arlington Hotel, Oil City, Pa. Joseph E. Keller of the N.P.A. will preside during the afternoon and J. E. Moorhead, executive secretary of the Pennsylvania Grade Crude Oil Association, in the evening.

During the afternoon Prof. Harold A. Everett of the mechanical engineering department of Pennsylvania State College will speak on "Wear as an Aid to Lubrication Diagnosis"; Harry M. Rugg, Pennsylvania Grade Crude Oil Association automotive engineer, on "Diesel Lubrication," and Max M. Roensch, power plant development engineer, Chrysler Corp., on "1939 Automotive Design and Future Engineering Trends." In the evening Dr. C. M. Larson, chief consulting engineer, Sinclair Refining Co., will discuss "The Chemistry of Aviation Lubricating Oils."

Asphalt Conference to Mark 20 Years of Highway Progress

Twenty years of progress in highway construction, with analysis of present materials, methods and equipment will be the theme of the twelfth national asphalt conference to be held under the auspices of the Asphalt Institute at the Biltmore Hotel, Los Angeles, Calif., during the week of February 27.

Thomas H. MacDonald, chief of the United States Bureau of Public Roads, will open the conference. The remarkable development of road equipment from hand tools to great machines which lay modern pavements in a continuous operation will be presented in two sessions planned and presented under the Government's senior highway engineer, J. L. Harrison.

Two sessions on methods will range from waterproofing and stabilizing the earth subgrade under all types of pavement, through the widespread use of local materials which lower the cost of highways, to the modern high-type pavements. Col. Bernard E. Gray, chief engineer of the Asphalt Institute, and Earl Withycombe, assistant state construction engineer of California, will direct these sessions.

Materials will be dealt with in two sessions. In charge of the sessions will be Prevost Hubbard, chemical engineer of the Asphalt Institute, and N. F. McCoy, senior engineer of the United States Bureau of Public Roads. A. T. Goldbeck and Stanton Walker are expected to tell of the research of the National Crushed Stone Association and the National Sand and Gravel Association.

Colorado and Wyoming Seek Amended Regulations

DENVER, Colo.—The new regulations governing oil and gas lease bonds recently issued by Secretary Ickes do not materially improve the situation in regard to leasing and developing public lands in the opinion of the men in this territory who are striving for a more liberal governmental policy.

Another movement to get the regulations amended has been started in Colorado and is proceeding concurrently with a similar move among Wyoming oil men. It is headed by Joe T. Juhan, of Glenwood Springs; H. Leslie Parker, of Denver; William A. Meyers, of Denver, and others. They seek amendments in accordance with the resolution adopted recently by the Independent Petroleum Producers Association. Warwick M. Downing, Colorado member of the Interstate Oil Compact Commission, has contacted Russell B. Brown, general counsel for the I.P.A.A., in regard to the matter and conferences have been started with Secretary Ickes. Mr. Parker states the subject goes beyond any material modification of bond requirements and into the entire matter of the governmental leasing policy. Some of the requirements, such as rentals on leased land, royalties, etc., are considered prohibitive, but in order to obtain a broader policy it is considered necessary to have relief legislation enacted.

A dispatch from Washington says Representative Horton (R.), Wyoming, called on Congress January 16 to encourage development of the nation's petroleum resources by stripping the O'Mahoney-Greever amendments of 1935 from the 18-year-old oil and gas leasing act, asserting "not one well" has been drilled on public lands in Wyoming since the act was amended.

St. Joseph, Mo., to Be Host to Oil Men Saturday Night

ST. JOSEPH, Mo.—Saturday night, January 21, St. Joseph will be host to oil men at a smoker and entertainment. Invitations are going out to oil men throughout the Forest City basin area. Last week the scouts and others were entertained at the Chamber of Commerce luncheon. The courtesies of the St. Joseph County Club have been extended to the oil fraternity for skeet and trap shooting.

Office space has been made available to oil men and oil groups for meetings and conferences, with free stenographic help. The St. Joseph Forward Association and Chamber of Commerce have launched a campaign to make the city oil-conscious and offer the conveniences and courtesies of its business and civic organizations to oil men.

Hotel lobbies and business thoroughfares have taken on the atmosphere of a typical oil town. Leasing activities in the Forest City basin area have attracted oil executives, geologists, land men and scouts, and automobile license plates from Oklahoma, Kansas, Texas, Louisiana and New Mexico, and even from Colorado, Illinois, Michigan and Indiana, line the traffic lanes.

Gas-Lift Topic of East Texas A.P.I. Chapter Meeting

The next meeting of the East Texas chapter of the American Petroleum Institute, Division of Production, will be held in the high school auditorium at Kilgore, Texas, on Tuesday evening, February 7, at 8:00 p.m.

The entire meeting will be devoted to a discussion of the subject, "Gas-Lift as a Production Method in the East Texas Field." The principal speaker will be W. N. Rees, district foreman for Atlantic Refining Co. in the East Texas field. Mr. Rees has had considerable experience in the use of gas-lift in the East Texas field and has, at this time, over 100 wells on gas-lift under his supervision. He will discuss installation cost, operation cost and problems in connection with the application of gas-lift to the individual well conditions in the East Texas field. Following Mr. Rees' paper, there will be a round table discussion.

CALENDAR

February

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Engineering Societies Building, New York, Feb. 13-16.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS AND LOUISIANA ENGINEERING SOCIETY, joint meeting, St. Charles Hotel, New Orleans, La., Feb. 23-25.

NORTH TEXAS OIL AND GAS ASSOCIATION, annual meeting, Wichita Falls, Feb. 25.

NATIONAL ASPHALT CONFERENCE, Los Angeles, Calif., week of February 27.

March

AMERICAN SOCIETY FOR TESTING MATERIALS, committee week and regional meeting, Deshler-Wallick Hotel, Columbus, Ohio, Mar. 6-10.

INTERNATIONAL ACETYLENE ASSOCIATION, 39th annual convention, Houston, Tex., March 8-10.

WELDING CONFERENCE AND SHORT COURSE, University of Oklahoma, Norman, Okla., March 9-10.

INDIANA INDEPENDENT PETROLEUM ASSOCIATION, spring convention, Hotel Severin, Indianapolis, March 14-16.

AMERICAN PETROLEUM INSTITUTE, spring meeting of Southwestern District Division of Production, Plaza Hotel, San Antonio, Tex., March 16-17.

WESTERN PETROLEUM REFINERS ASSOCIATION, annual meeting, San Antonio, Tex., Plaza Hotel, March 20-22.

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, 24th annual meeting, Skirvin Hotel, Oklahoma City, March 22-24.

April

AMERICAL CHEMICAL SOCIETY, Baltimore, Md., April 3-7.

NATIONAL PETROLEUM ASSOCIATION, semi-annual meeting, Hotel Cleveland, Cleveland, Ohio, April 12-13.

OIL-WORLD EXPOSITION, Houston, Tex., April 24-29.

May

PETROLEUM ELECTRICAL SUPPLY ASSOCIATION AND PETROLEUM INDUSTRY ELECTRICAL ASSOCIATION, Rice Hotel, Houston, Tex., May 2-4.

NATURAL GASOLINE ASSOCIATION OF AMERICA, Hotel Tulsa, Tulsa, Okla., May 3-4-5.

AMERICAN PETROLEUM INSTITUTE, 9th mid-year meeting, Roosevelt Hotel, New Orleans, La., May 15-18.

WORLD AUTOMOTIVE ENGINEERING CONGRESS, sponsored by S.A.E. for New York (May 22-26), Indianapolis (May 30), Detroit (May 31-June 2), San Francisco (June 6-8), May 22-June 8.

June

PENNSYLVANIA GRADE CRUDE OIL ASSOCIATION, Hotel Hershey, Hershey, Pa., June 15-16.

THIRTEENTH INTERNATIONAL CONGRESS OF CARBIDE, ACETYLENE, OXYACETYLENE WELDING AND ALLIED INDUSTRIES, Munich, Germany, June 25-July 1.

ENGINEERING and OPERATING

In This Issue

DIAMOND CORE DRILLING METHODS IN THE PENNSYLVANIA FIELDS
By Newton C. Williams and Paul M. Phillippi ..... *Page 34*

Core drilling practices employed in Pennsylvania are reviewed with special attention given to equipment and procedures. Modern methods of packing and shipping samples are described together with the manner in which cores are analyzed in laboratories. Furthermore, there is comment on the extent to which core drilling has been used in determining subsurface conditions in various parts of the world.

SAFETY—WHILE MAKING RAT-HOLE CONNECTIONS ..... *Page 36*

An extra rat-hole or mouse-hole is regarded as an important feature by many drilling companies from the standpoint of safety, time saved, and improved operations. A brief description is presented showing advantages which can be gained by rat-hole connections.

TWIN WELLS DRILLED FROM ONE LOCATION IN LAKE MARACAIBO VENEZUELA ..... *Page 39*

Drilling and producing of twin wells from one location has been accomplished in a unique manner in the Tia Juana area of the Bolivar Coastal fields, Venezuela. Geological conditions and the manner in which the field has been developed are summarized. This twin well drilling was mostly done without whipstocks; it was accomplished by tilting the derricks. The equipment of these wells for economical pumping is also discussed with attention given to mechanical details.

STUDY OF HEAT TRANSFER RATES IN COMMERCIAL EXCHANGERS
By W. L. Nelson ..... *Page 40*

To clarify aspects of heat exchanger design which have been confusing to engineers, the author discusses the subject which he has studied over a considerable period of time, during which he has accumulated data on commercial exchangers.

CALCULATIONS OF BACK-PRESSURE TESTS ON NATURAL GAS WELLS
By J. William Ferguson ..... *Page 47*

For the purpose of reducing the number of operations in the process of making calculations in the course of making back-pressure tests, a simplification of method is presented which eliminates the necessity for some interpolations and furnishes the means for better interpretation of some features of the back-pressure curves.

OPERATING IDEAS ..... *Page 45*

QUESTIONS ON TECHNOLOGY—*By C. K. Francis, Ph.D.* ..... *Page 59*

PROBLEMS FROM READERS—*By L. G. E. Bignell* ..... *Page 60*

Diamond Core Drilling in Pennsylvania Oil

By
NEWTON C. WILLIAMS
and PAUL M. PHILLIPPI
Olean Petroleum Co.

The history of diamond core drilling reveals that this is not a modern tool, but was actually practiced as far back as the bronze and stone ages. The method of cutting hard rocks employed by the ancient Eyptians remained a mystery for a long time. However, a solution of this question seems to have been found by the research work of Flinders-Petrie, who through various finds at Gizeh, came to the conclusion that the Egyptians used precious stone drills. He states that granite broken from a drill hole at Gizeh showed marks which can be explained only by the use of solid points of precious stones.

The first diamond drill hole in the United States was put down in northeastern Pennsylvania, in the latter part of the nineteenth century, for the purpose of prospecting for anthracite. The drill itself was the same as employed by Leschot in Switzerland. The machinery of the drilling operation was greatly improved at this time by Captain Beaumont, an Englishman.

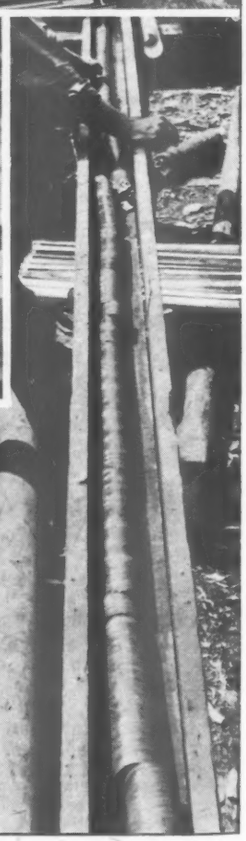
Principle of Diamond Coring

The principle of diamond coring is based on the fact that diamonds are the hardest of mineral substances and that they possess abrasive quality when moved over other minerals. If, then, diamonds are set in one end of a cylindrical bit and rotated horizontally, the bit will wear away any other mineral with which it is in contact. This leaves a cylindrical core of the mineral which protrudes upward inside the bit as the latter sinks into the mineral. Add to this a steady stream of water for cooling the diamonds and for washing away the cuttings of the bit, and we have the basic principles of all diamond coring.

Two kinds of diamonds—carbon and borts—are used for diamond drill work. The carbon is found in opaque nodules of irregular shape, black on the outside, and of various shades of grey when broken. It has no cleavage planes, differing in this respect from the brilliant. It is especially fitted for drill work in hard rock, for the carbons simply wear away gradually without splitting or cleaving. The carbon is about the only diamond which can

(Upper) Locating saturation samples. (Lower) Core before marking and sampling

Sealing saturation samples

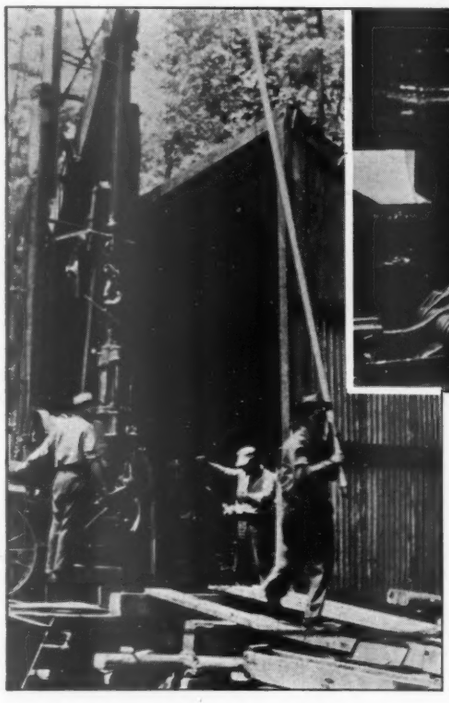


Pushing the core out of inner barrel into box

in the Fields

Unscrewing drill rods while pulling

Carrying out the drill rods



Safety hook

Running the hydraulic back for another hitch on the drill rods

be used successfully in coring the shell above the Bradford sand and the conglomerate found in the coarse-grained sands of the lower and middle Pennsylvania regions.

The bort is a semitransparent stone, less tough than the gem, and has a different crystallization, which makes it more likely to split along its cleavage planes. For soft rock, borts may be used to good advantage. This stone has been used to cut most of the Pennsylvania oil-bearing sands, but extreme caution must be observed when coring the caprock and harder formations. A successful method now employed is to use the carbons for coring the hard rock, while the borts are run for straight sand or shale.

The Diamond Bit

It has been found that it is most economical to use bits, in both the carbons and borts, carrying from 10 to 12 diamonds, as in Figure 1. The stones themselves weigh about 4 or 5 carats each. Bits carrying fewer diamonds will wear the metal away rapidly, causing the loosening and breaking of stones. Extreme care must be used in setting the diamonds in the bit, as one or two stones slightly out of gauge will cause excessive wear and a high diamond loss. The average diamond loss, due to wear and breakage, for approximately 100 wells cored in the Pennsylvania field runs about $1 a foot.

The diamond bits generally used in this field cut a core 2¼ inches in diameter with an outside hole of about 3½ inches. This size core is large enough to meet the needs of the most up-to-date laboratory. If at any time larger cores are desired, they can be taken. Naturally these will require more time and expense, as the cutting of the core will take longer and the number of diamonds in the bit multiplies when the core size is increased.

Why We Diamond Core

As far back as 1875, Leslie, Pennsylvania state geologist, recognized the unreliability of information received from sampling drill cuttings. The same holds true today. In many wells the sand and shales are very thin. The cable-tool drill passing from one to the other, and grinding all the particles together before they are brought up in the bailer or sand-pump, renders a correct report of their original stratification an impossibility.

In 90 per cent of the cases when wells are diamond core-drilled, the actual amount of sand is found to be less than believed by the owner. This is due to the fact that the well records have been compiled from cable-tool cuttings. Sand, being quite abrasive, will tend to grind up the slate cuttings very finely. These finely pulverized slate cuttings will run off first when washed in a keg, and lead the owner to estimate that his sand body is thicker than it really is. Then, too, with the common bailer, loose sand is left in the bottom of the hole. As the formation is redrilled, the cuttings follow the tool down, and these may show for several feet after the sand has been actually drilled through. Another possibility is quite likely to occur: While running the tools and bailer up and down the hole, particles fall in from above, and enough of these foreign cuttings will change the true character of the sand. False ideas also may be obtained from washing drill cuttings. A loose sand, being low in oil saturation, yet having a fairly high gas content, will wash excellently, due to the release of pressure while drilling.

It is quite impossible to understand why producers are willing to spend many thousands of dollars in development and mechanical equipment and at the same time leave out a thorough knowledge of their sand conditions. The success of a flood property is directly proportional to the oil sand contained within its bounds. No operator can afford to water-flood without first studying the characteristics of his sand exhaustively. Oil content and well spacing, setting of packers, type and size of pumping equipment and the style of flooding equipment, are all dependent on a thorough detailed examination of the sand. How can a producer find out completely about his own particular sand condition? Only by bringing out a solid section of that formation as it exists in the ground. Diamond drilling is the only method of coring which has been able to do this in our field.

The diamond core gives 100 per cent recovery, enabling the correct depth in feet to be marked on the core itself. The sand and shale breaks can be accurately logged without estimation. Not only does it furnish accuracy and total core recovery, but also supplies a true value oil content. Experience has shown that oil is forced to the center of the core by the circulating water.

Laboratory Analysis

The laboratory testing of a diamond core does not differ a great deal from the routine analyses performed on other types of cores. However, in addition to securing many more test pieces to work with, the exact depth of each sample is accurately and definitely determined. The importance of this fact must not be overlooked, as the careful setting of packers is certain to prove of the utmost value to the oil producer who is painstaking in his operations. This is particularly true in the selection of permeability samples. A uniform permeability profile is more often the exception rather than the general rule. It is well known that the permeability of certain

producing sands is erratic and extremely variable. Within the short distance of several inches, a wide range of permeability values may be encountered. A visual examination of the core yields nothing as far as permeability is concerned. It is only by systematic sampling at regular intervals that a complete detailed profile may be secured. The diamond method provides a core which allows precise sampling of the entire sand body.

A recent innovation in the laboratory analysis of a diamond core is the actual water flooding of samples in the laboratory. These samples are secured in the field directly adjacent to a saturation sample and sealed in a container for transportation purposes. The oil content is determined in the usual manner from the saturation sample. Both ends of the flooding sample are faced smooth and a centered hole of three-eighths inch in diameter drilled lengthwise. The sample is then securely installed in a specially designed flooding apparatus. Water under pressure is forced through the sample and continuously applied until no stain is visible on absorbent paper when touched to the surface of the sand. This period of flooding usually takes from 48 to 72 hours, although in some instances it has been necessary to flood extremely tight samples 8 to 10 days. No effort is made to measure the expelled oil, although an accurate record is maintained of the amount of water which passes through each sample. At the conclusion of the test, the sample is broken into pieces, placed in a retort and the oil content of the "flooded-out" sample determined in the usual manner. The difference between the original saturation and the flooded sample represents the amount of recoverable oil. The shaded area in Figure 2, which is adapted from an actual core report, represents the residual or remaining oil content after water-flooding, as determined by laboratory analysis. This particular profile emphasizes the necessity of flooding with two different pressures in order to secure the highest possible recovery.

The laboratory procedure, as outlined above, represents water-flooding under ideal conditions and maximum pressures. These pressures are far greater than it would be possible to apply in the field. However, remarkable correlation between laboratory results and actual field data has been achieved by this method of predicting recovery.

Diamond Coring Outfit

A diamond coring outfit capable of handling all of the oil sand coring in the Pennsylvania fields has finally developed into the following main items:

1. The gas or gasoline-driven machine which rotates the drill rods equipped with a hoisting drum for running and pulling these from the hole.
2. The tough hollow 2-inch drill rods fitted with inside couplings which rotate the core barrel.
3. The double tube core barrels and the diamond bits.
4. The string of 3½-inch, 9½-pound casing with which the hole is cased off to where coring is commenced.
5. The miscellaneous blocks, lines, water hoses, tins, and sampling jars that go with the outfit in general.

Double-Tube Core Barrel

This type of core barrel is designed to carry the circulating water to the bit without permitting it to come in contact with the core after it has been cut. In this manner the direct washing of the core is prevented. Figure 3 shows how the barrel is constructed. The inner tube is attached to the inside of the core-barrel head and swivels on ball bearings. Circulating water being forced down through the hollow head is diverted between the outer and inner barrels. The water continues down inside the bit and goes through the water courses. Here it cools the diamonds, picks up the cuttings and travels back up outside of the outer tube and drill rods, and finally comes to the surface through the 3½-inch casing. As the bit cuts its way into sand or shale, the inner tube slips down over the core, where it is protected until the run is completed.

At this time it may be well to note that there is no downward water pressure on the core. Shielded by the inner barrel, which is sealed at the top, the core is surrounded by water pressure

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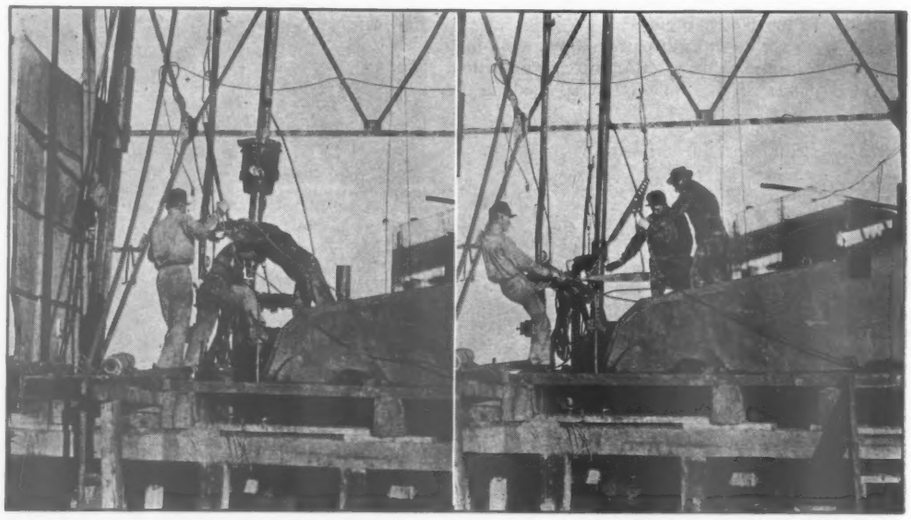
SAFETY — While Making Rat-Hole Connections



Rat-hole connections are frequently necessary in drilling operations, particularly if the well being drilled is a wildcat or is located in "sticky" country. They aid materially in preventing stuck drill pipe as the driller can maintain circulation while pulling a joint or while lowering one into the hole. Where the time element is important, the mud pump is shut down less and the over-all time required is less than by the ordinary method where the kelly joint is set back. The operation is a safety one from the standpoint of the contractor and many drilling companies consider the extra rat-hole, or mouse-hole, an essential part of their equipment.

The mouse-hole is located opposite the well bore on the side of the rotary table away from the drawworks. Very little expense is incurred in drilling it as this can be done while waiting for the cement to set around the surface pipe. From 30 to 40 feet of junk casing is used and this is recovered before the well is abandoned. The only other extra equipment necessary is a set of elevators or clamps.

When making a rat-hole connection, the kelly is not set back. The new joint is placed in the mouse-hole ahead of time and the spinning rope is placed around it. The kelly joint is unscrewed from the drill stem in the hole and the pin placed in the box of the new joint. The new joint is prevented from turning by the lead tongs and the kelly is screwed on it in the regular manner, after which it is tonged. The kelly and new joint are then elevated until the pin on the new joint can be placed in the box on top of the drill stem. It is best to screw these together slowly as there is some danger of backing off the connection between the kelly and joint. As soon as the connection between the new joint and the pipe in the hole has been tonged, the pump can be started and circulation renewed before lowering the joint into the hole.

If the driller wants to pump a joint out of the hole, he has only to reverse the process above. The joints are placed in or taken from the mouse-hole with the catline.

In the photo at the left above, the crew has the kelly in position to lower it on the new joint. The pipe racker has his right shoulder against the pin on the kelly and has forced it over the joint in the mouse-hole. Note that his back is in a straight line and most of his drive is coming from his left leg. The back-up man's left leg and back are in a straight line as he prevents the pipe-racker from over-shooting the mark and helps him steady the kelly while the driller lowers it. The derrick-man is holding the lead tongs away from the heads and arms of the men handling the kelly and will place them around the new joint as soon as the back-up man raises the spinning line.

In the second photo, the bottom of the new joint has just cleared the top of the floor and is prevented from swinging into the rotary table and stem in the hole by the derrick-man who has a short length of rope around it. The two floor men are facing the pipe with their feet braced, ready to seize the pipe just as soon as it clears the rotary table.

This operation is carried out rapidly by an experienced crew and with very little danger. A new man or one inexperienced in making this type of connection must be watched carefully as being out of position may cause an injury.

Twin Wells Drilled From One Location in Lake Maracaibo

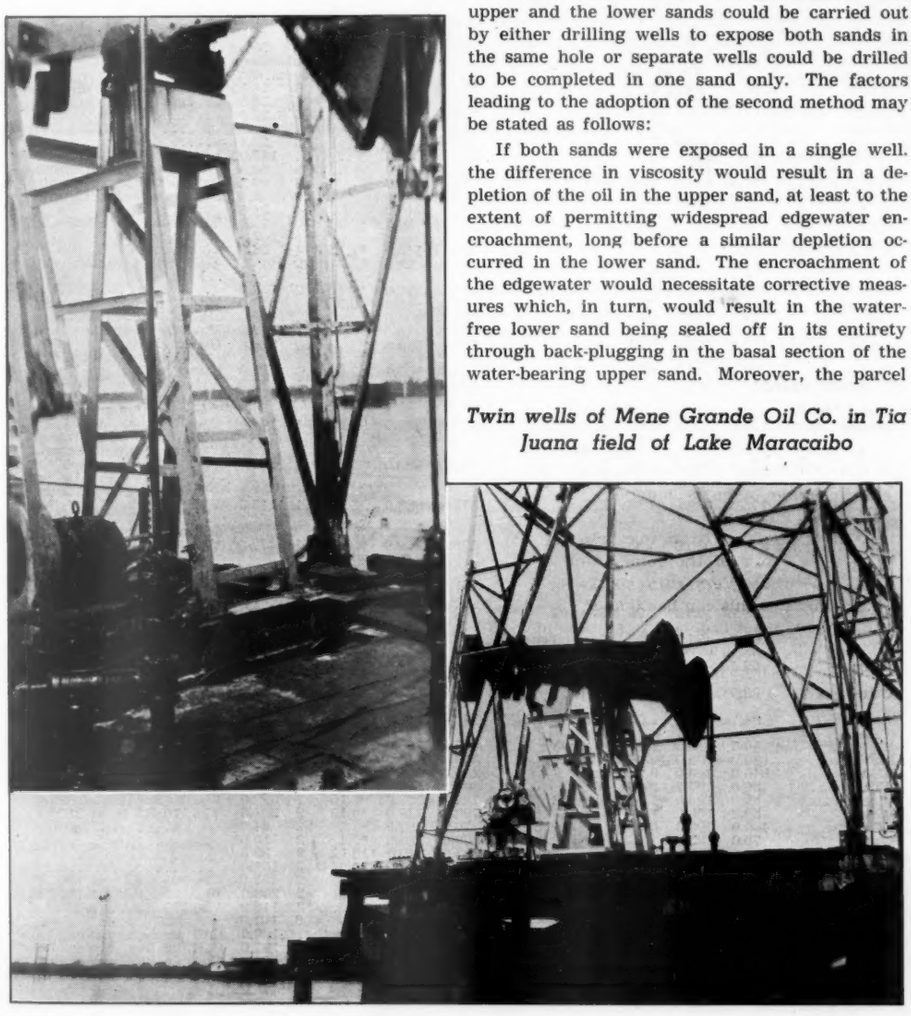
The Tia Juana field is located approximately midway between the older Cabimas and Lagunillas fields in the district of Bolivar, State of Zulia. The property of the Mene Grande Oil Co. in the area is covered by Lake Maracaibo throughout its entire extent. To date a total of 132 wells have been drilled on this property and, due to the presence of the water, it has been necessary to undertake all drilling activities from piling-supported foundations.

Exploratory drilling had revealed that the chief structural feature in the area was an anticline extending through the northern portion of the field. Southward, the productive formations of Miocene age dip uniformly at an angle of approximately 3 degrees with the horizontal. Two productive sands are present and are separated by a definite shale break continuous over a wide area with a range of from 10 feet to 60 feet in thickness. The upper sand, reached at depths ranging from 1,770 feet to 2,630 feet, is approximately 200 feet in thickness while the lower sand has an average vertical extent of 140 feet. The southern limit of production in the two sands was found to be fixed by a common edgewater table encountered at a depth of 2,765 feet subsea.

The original work of exploitation involved the completion of producers in the upper sand and in the lower sand and in combination of the two. As the work progressed, it was found that the productive capacity of the lower sand was consistently less than that of the upper and that this production differential increased from north to south. Moreover, a difference of approximately 2 degrees in gravity existed in the oil between the two sands, the oil in the lower proving to be the heavier and having a range of from 10 to 12.5 degrees A.P.I. The viscosity of the latter was much greater than was that of the former and the gas-oil ratios were approximately five times as great in the upper sand as in the lower. Consequently, the gravities of the oil from double sand wells revealed a tendency to produce principally from the upper sand.

It was realized that the exploitation of the upper and the lower sands could be carried out by either drilling wells to expose both sands in the same hole or separate wells could be drilled to be completed in one sand only. The factors leading to the adoption of the second method may be stated as follows:

If both sands were exposed in a single well. the difference in viscosity would result in a depletion of the oil in the upper sand, at least to the extent of permitting widespread edgewater encroachment, long before a similar depletion occurred in the lower sand. The encroachment of the edgewater would necessitate corrective measures which, in turn, would result in the water-free lower sand being sealed off in its entirety through back-plugging in the basal section of the water-bearing upper sand. Moreover, the parcel could be exploited with a greater profit. These factors, it was felt, outweighed the cost of drilling the additional hole.



Twin wells of Mene Grande Oil Co. in Tia Juana field of Lake Maracaibo

All drilling equipment was operated upon piling-supported foundations, which, including the derrick support, required a total of 52 piling. Four piling, each driven to a 26,000-pound bearing, were placed under each derrick corner.

R. H. Newton, general superintendent, production department, Mene Grande Oil Co. C. A., Venezuela

Standard A. P. I. 122-foot derricks, having a rated capacity of 244,000 pounds and reinforced with 4-inch relegs, were employed, together with four-beam crownblocks equipped with two sheaves in line on each side of a single central sheave.

The piling employed in derrick and drilling foundations was driven, capped, and braced according to a standard plan and did not permit the installation of drilling equipment at other than the designed location. The same limitation also applied to any lateral movement of the derrick. In order to eliminate the expense of building a separate derrick foundation for both the upper and lower sand producers, it was decided to drill both wells from a common foundation. It was seen that the distance between the two wells would be governed largely by three factors:

1. Sufficient room must be provided to permit servicing of one well by cleanout equipment without interrupting the production from the other well.

2. The maximum possible lateral movement which could be obtained by shifting the crownblock and tilting the derrick.

3. In the event two pumping jacks were installed, sufficient room must be provided to give adequate clearance to the moving parts.

The final decision was largely influenced by the design of a pumping jack described below.

The derrick foundations were constructed so that the casing rack side was 3 inches lower than the drawworks side. This, together with the use of the crownblock 20 inches off center, increased the stress by approximately 35 per cent in the two derrick legs which were lowered. The lower sand well was drilled first because one electrical logging operation could be made to determine the 8⅝-inch casing seats above both the upper and the lower sands and also to prevent the cement-

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Study of Heat Transfer Rates in Commercial Exchangers

By W. L. NELSON

The selection of transfer rates for heat exchangers is always confusing to design engineers. The designer turns to the mass of film rate data that is available in the literature and then finds that the transfer rates so computed may range from 2 to 5 times (200 to 500 per cent) higher than in any exchanger that he has seen in operation. The answer to this obvious lack of conformity lies in the resistance to heat flow caused by dirt, corrosion, wax, etc., that is present to some extent in even clean distilled oils.

In an effort to assist in the clarification of this vital problem, the author has long accumulated data on commercial exchangers—some of which is shown in Table 1. The clean transfer rates were computed by the use of the film transfer rates for steam, water, condensing and oils inside of tubes, that are recommended in "Petroleum Refinery Engineering."[1] Only one correction to these transfer rates was made. The film transfer rates given in "Petroleum Refinery Engineering" for oils on the inside of tubes were increased as indicated in Figure 1. Even the new data for oils outside of tubes (Figure 1) are not altogether satisfactory because a comprehensive method of judging the effect of baffles on the shell-side velocity is not available. Average film temperatures were used in determining viscosities.

Velocity on Outside of Tubes

The difficulty in determining the velocity on the outside of a tube bundle is due to the fact that some oil always leaks through the baffle instead of following the regular path formed by the baffles. In most instances the leakage past the baffle is of vital importance because the oil flows in the narrow space between the baffle and the tube surface and thus causes an increase in turbulence and rate of heat transfer that is all out of proportion to the change in bulk-velocity that is caused by the leakage.

However, some general conclusions concerning the velocity on the shell side can be stated. When putting the same amount of material through the shell as that sent through the tubes —and routing the material around the tubes from one end of the exchanger to the other end along

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TABLE 1—DATA ON COMMERCIAL EXCHANGERS

Name—	Transfer rate—Actual	Transfer rate—Clean	Transfer rate—Computed	Per cent error	Fouling factor	Tubes—Material	Tubes—In °F.	Tubes—Out °F.	Tubes—Velocity ft./sec.	Shell—Material	Shell—In °F.	Shell—Out °F.	Shell—Velocity ft./sec.	Shell—Tube passes	Mean temp. diff.	Notes	Ref.
1. Stabilizer reflux con.	45.5	97.4	56.3	23.8	11.7	Water	78.4	88.7	0.7	Reflux and gas	113	82.7	...	6	11.55	Matted hair, etc. on tubes	2
2. Stabilizer reflux con.	93.7	134.0	77.1	—17.7	3.2	Water	86.0	93.8	2.97	Reflux and gas	117	93.4	...	4	13.5	.....	2
3. Stabilizer reflux con.	144.6	144.6	101.0	—24.0	0.0	Water	84.8	96.7	4.99	Reflux and gas	128	100.0	...	4	22.0	.....	2
4. Stabilizer reflux con.	45.6	90.5	58.5	27.8	10.8	Water	80.0	87.0	...	Reflux and gas	110	91.0	...	..	16.25	.....	2
5. Gasoline condenser	88.2	112.5	71.6	—18.8	2.35	Water	73.0	99.0	5.32	Gaso. and gas	207	76.0	...	6	29.4	.....	2
8. Partial condenser	23.7	47.0	32.0	35.0	20.9	39 A.P.I. crude	88.0	213.0	2.42	57.7 A.P.I. gaso.	311	298.0	...	4	147.0	Large temp. difference	2
9. Partial condenser	37.2	117.0	69.2	86.0	18.4	54.6 A.P.I. nap.	77.0	151.0	4.43	62.3 A.P.I. nap.	204	193.0	...	6	80.5	Large temp. difference	2
10. Partial condenser	48.0	125.0	74.0	54.0	11.9	54.6 A.P.I. nap.	77.0	147.0	6.80	62.3 A.P.I. nap.	212	198.0	...	6	90.2	Large temp. difference	2
11. Partial condenser	66.8	120.0	65.2	—2.4	6.6	54.6 A.P.I. nap.	86.0	172.0	5.67	62.3 A.P.I. nap.	210	204.0	...	6	70.6	Large temp. difference	2
16. Rich oil preheater	108.0	168.0	91.3	—15.5	3.3	42 A.P.I. oil	247.0	339.0	1.4	Steam	346	346.0	...	4	31.8	.....	2
19. Stabilizer nap. cooler	105.0	134.0	74.3	—29.2	2.1	Water	78.2	86.3	2.68	58.2 A.P.I. nap.	143	86.3	*2.82	10	23.1	Tube sheets matted with hair, etc.	2
21. Rich oil exchanger	33.5	65.4	49.2	47.0	14.6	42.7 A.P.I. oil	103.0	242.0	1.56	37.2 A.P.I. oil	325	143.0	*1.15	4	58.8	.....	2
22. Absorp. oil cooler	48.8	63.9	48.1	—1.4	4.8	Water	79.0	88.7	0.82	41.1 A.P.I. oil	114.6	90.5	*1.5	2	17.7	Tube sheets matted with hair, etc.	2
25. Residuum exchanger	19.2	27.4	20.1	4.7	15.5	39 A.P.I. crude	192.0	222.0	3.86	13 A.P.I. resid.	598.0	370.0	*0.46	2	262.0	.....	2
26. Gas oil cooler	65.8	104.4	79.8	21.3	5.6	Gas oil	211.0	190.0	2.6	Water	34.5	41.0	6.0	..	163.0	Manuf. laboratory test	3
27. Kerosene heater	233.0	321.0	216.0	—7.3	1.2	Kerosene	78.5	197.0	6.6	Steam	304.0	304.0	...	..	160.0	Manuf. laboratory test	3
28. Kerosene cooler	124.0	152.0	117.0	—5.6	1.5	Water	36.5	44.5	3.4	Kerosene	197.0	78.5	3.4	..	88.0	Manuf. laboratory test	3
29. Asphalt heater	42.0	52.5	40.9	—2.6	4.8	Asphalt	152.0	172.0	8.05	Steam	380.0	380.0	...	..	210.0	Used viscosity of 200 centipoises at 262° F.	3
30. Asphalt cooler	16.6	18.7	16.7	0.6	6.8	Water	37.0	45.0	0.61	Asphalt	162.0	107.0	2.04	..	121.0	Same asphalt as No. 29	3
31. Lube exchanger	25.8	26.4	25.8	—7.0	1.9	30 A.P.I. crude	225.0	300.0	0.54	Lube	575.0	329.0	0.87	1	177.0	Visc. of lube, 150 S.S.U. at 100° F. Design study by manufacturer	3
32. Lube exchanger	60.0	95.5	71.6	19.3	6.2	30 A.P.I. crude	225.0	300.0	2.67	Lube	575.0	329.0	2.85	1	177.0	Visc. of lube, 150 S.S.U. at 100° F. Design study by manufacturer	3
33. Lube exchanger	60.5	86.0	66.0	9.1	4.9	30 A.P.I. crude	225.0	300.0	2.63	Lube	575.0	329.0	2.17	1	177.0	Visc. of lube, 150 S.S.U. at 100° F. Design study by manufacturer	3
34. Lube exchanger	91.0	126.0	87.5	—3.8	3.1	30 A.P.I. crude	225.0	300.0	7.38	Lube	575.0	329.0	2.93	1	177.0	Visc. of lube, 150 S.S.U. at 100° F. Design study by manufacturer	3
35. Lube exchanger	78.5	129.0	89.0	13.4	5.0	30 A.P.I. crude	225.0	300.0	5.6	Lube	575.0	329.0	2.17	1	177.0	Visc. of lube, 150 S.S.U. at 100° F. Design study by manufacturer	3
36. Gas oil cooler	58.5	61.5	52.0	—11.1	0.9	Water	68.7	72.0	2.05	Gas oil	151.5	90.6	1.68	1	44.8	Laboratory test, 43 S.S U. at 100°F.	3
37. Gas oil cooler	73.5	83.6	67.0	—8.9	1.6	Water	68.7	73.2	2.05	Gas oil	152.5	96.0	2.51	1	48.5	Laboratory test, 43 S.S U. at 100°F.	3
38. Gas oil cooler	93.5	112.0	87.5	—6.4	1.8	Water	68.6	74.3	2.05	Gas oil	150.5	97.6	3.32	1	48.7	Laboratory test, 43 S.S U. at 100°F.	3
39. Gas oil cooler	108.5	146.5	107.0	—1.4	2.4	Water	68.5	75.3	2.05	Gas oil	149.3	99.0	4.39	1	49.1	Laboratory test, 43 S.S U. at 100°F.	3
40. Gas oil cooler	122.0	161.0	122.0	0	2.0	Water	68.5	76.3	2.05	Gas oil	151.5	101.6	4.87	1	51.3	Laboratory test, 43 S.S U. at 100°F.	3
41. Gas oil cooler	138.0	183.5	134.0	—2.9	1.8	Water	68.1	72.5	2.05	Gas oil	148.5	103.3	6.12	1	51.8	Laboratory test, 43 S.S U. at 100°F.	3
42. Kerosene cooler	34.6	45.5	37.0	7.0	6.9	Water	80.0	118.0	1.15	Kerosene	450.0	125.0	*0.2	2	155.0	.....	4
43. Gas oil cooler	35.7	40.6	32.6	—8.7	3.4	Water	80.0	109.0	2.06	Gas oil	550.0	140.0	*0.2	2	192.0	.....	4
44. Wax dist. exchanger	26.4	46.5	29.8	12.9	16.4	W.D.	640.0	300.0	0.923	Crude	250.0	475.0	*1.6	2	97.0	Vis. 125 S.S.U. at 100° F.	4
45. Wax dist. cooler	22.5	29.0	20.6	—8.4	10.0	Water	80.0	96.0	2.06	W.D.	300.0	150.0	*0.5	2	126.0	Vis. 125 S.S.U. at 100° F.	4
46. Lube stock cooler	15.0	23.6	17.1	14.0	24.4	Water	80.0	106.0	1.6	Lube	725.0	220.0	*0.15	2	322.0	Vis. 80 S.S.U. at 210° F.	4
47. Lube stock cooler	15.9	22.0	16.6	4.4	17.3	Water	80.0	109.0	1.6	Lube	760.0	220.0	*0.15	2	331.0	Vis. 170 S.S.U. at 210° F.	4
49. Kerosene exchanger	29.3	41.9	31.3	6.8	10.3	Kerosene	400.0	300.0	0.4	34.5 A.P.I. crude	270.0	283.5	*2.8	2	64.0	.....	4
50. Kerosene cooler	38.6	50.5	40.3	4.4	6.1	Water	70.0	92.0	1.76	Kerosene	300.0	125.0	*0.4	2	115.0	.....	4
51. Gas oil exchanger	86.0	238.0	98.0	14.0	7.4	Gas oil	540.0	315.0	6.7	Crude	284.0	340.0	*10-12	2	89.0	.....	4
52. Gas oil cooler	65.0	72.4	53.2	—18.2	1.6	Water	70.0	94.0	3.0	Gas oil	315.00	227.0	*1.64	2	131.0	.....	4
53. Wax dist. exchanger	65.0	147.0	59.5	—8.5	8.6	W.D.	630.0	370.0	2.5	Crude	340.0	388.0	*10.0	2	102.0	Vis. 125 S.S.U. at 100° F.	4
54. Wax distillate cooler	23.0	46.5	27.4	19.1	22.0	Water	70.0	90.0	2.04	Wax D	370.0	240.0	*1.2	2	203.0	Vis. 125 S.S.U. at 100° F.	4
55. Lube stock exch.	50.0	62.5	47.6	—4.8	4.0	Lube	700.0	420.0	1.72	Crude	388.0	423.0	*9.0	2	116.0	Vis. 170 S.S.U. at 210° F	4
57. Residuum exchanger	19.0	60.2	29.8	57.0	36.0	10 A.P.I. tar	700.0	451.0	2.9	Crude	423.0	453.0	*5.0	8	101.0	.....	4
58. Kerosene cooler†	16.5	35.3	19.9	20.6	32.1	Kerosene	390.0	92.0	0.5	Water	58.0	92.0	Convect.	..	122.0	Coil in box cooler	5
59. Gas oil cooler†	15.0	18.9	13.2	—12.0	13.8	Gas oil	450.0	80.0	0.5	Water	58.0	92.0	Convect.	..	122.0	Coil in box cooler	5
60. Wax dist. cooler†	7.05	9.5	7.08	0.6	47.0	Wax dist.	475.0	88.0	0.17	Water	58.0	170.0	Convect.	..	120.0	Coil in box cooler	5
61. Lube stock cooler†	6.91	9.5	6.95	0.9	39.0	Lube	580.0	74.0	0.12	Water	58.0	117.0	Convect.	..	132.0	Coil in box cooler	5

*Estimated. †Coil in box.

TWIN WELLS

(Continued from Page 39)

ing of the upper sand well while setting the 8⅝-inch casing in the lower sand producer. After completing the lower well, the rotary was shifted 70 inches towards the drawworks preparatory to drilling the upper sand producer. The derrick was then jacked up 6 inches on the casing rack side and supported in this position by placing 3- by 6-inch boards under the raised sill. The final move consisted in skidding the crownblock across the water table to the low side of the derrick, upon the completion of which the upper sand well was spudded in. The entire operation required approximately six hours.

To date a total of 17 twin wells have been drilled from the single derrick foundation and in only one instance has it been necessary to employ an oriented whipstock in order to deviate the second hole away from the first.

Style Change

The only change made in the method of drilling twin wells since the initiation of the practice was the substitution of a five-sheave, all-in-line crownblock for the old style four-beam, five-sheave, babbitted bearing block. The old style block was first installed at right angles to a line passing through the drawworks and casing rack and moved as far as the water table would permit toward the low side of the tilted derrick. In drilling the lower sand wells, or the one farthest from the drawworks, the fleet angle of the fast line was approximately 6 degrees. This deviation from good practice resulted in undue wear on both the line and the sheave. The all-in-line blocks were then purchased and installed with the long axis of the block assembly parallel to a line passing through the drawworks and casing rack. As was previously the case, these blocks were skidded, as far as the clearance of the drilling line would permit, toward the low side of the derrick.

To date no serious difficulties of any nature have been encountered in drilling operations. The drill pipe can be racked while drilling either of the twin wells as easily as when drilling a well in the center of the derrick foundation.

The design of a pumping jack for the twin wells required the development of some arrangement whereby one of the wells could be pumped without interfering with either the production or cleanout operations of the other. A standard pumping jack was utilized by extending the base members laterally to support two samson posts instead of one. Independent walking beams were driven through separate pitmans to each crank of the twin-crank reduction gear. The cranks were spaced at an angle of 90 degrees to reduce the peak loads. Inasmuch as the reduction gear was rated for operation as a single-crank unit, no difficulty was experienced when the unit was operating on only one well. An easily demountable counterbalance mechanism was included so that when both the twin wells were pumping, one of them could be shut down and the beam put back for well servicing without interfering with the operation of the other. The pitman bearing was designed to facilitate the work of disconnecting one well from the unit and the rotary counterbalance was designed to facilitate recounterbalancing when changing from twin well to single well operation.

Tests made with a recording wattmeter have disclosed that the most practical method of balancing the twin well jack is to balance each well separately and then put the two together and rebalance. The power requirements for pumping both wells simultaneously with a given stroke length and s.p.m. is approximately 85 per cent of the power required to produce the two wells separately under the same conditions.

Upon the completion of the two wells, the derricks are leveled and the all-in-line crownblocks replaced with the four-beam, five-sheave assemblies. Cleanout operations are performed by skidding the block on the level water table. This permits a maximum movement of approximately 40 inches.

In summary, it has been found economic to drill two wells from a single well foundation and, after completing, to pump them with a pumping jack having only one gear reducer and one motor.

HEAT TRANSFER

(Continued from Page 40)

a line parallel with the tubes—the shell velocities are somewhat as follows:

No.	Velocity (approx.) Tube passes	Tubes	Shell
1. No baffles	1	1	0.2 to 0.4
2. No baffles	2	1	0.1 to 0.2
3. Normal number of baffles	2	1	1.5 to 3.0
4. Large number of baffles	2	1	2.5 to 5.0

Obviously much latitude is possible in such estimates of shell velocity. For a large volume stock, such as crude oil, being sent through the shell, arrangements such as No. 1 or 2 might be used, or the number of tube passes could be raised to 4—10 and use baffles on the shell side, which, however, results in an unfavorable mean temperature difference.

Discussion of Commercial Data

The results shown in Table 1 serve to emphasize one vital point. The inability to compute transfer rates with accuracy cannot be due altogether to inadequacies in the transfer rate data because the variations are too great. This leaves only one source of error, namely, differences in the amount of fouling. Unfortunately, scarcely any fouling or dirtiness factors have been tabulated—and until such factors are evaluated, all of our accumulated data on transfer rates are valuable only as development of general theory. In spite of the discrepancies evident in the computed rates as compared with the actual rates, the author feels that the film transfer rates are reasonably correct and that the main source of error lies in the inability to evaluate the degree of fouling.

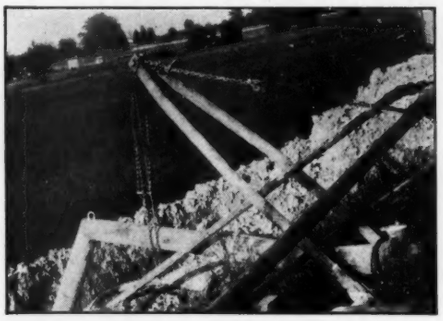
References

1. Nelson, Petroleum Refinery Engineering, McGraw-Hill Book Co., 1936.
2. Higgins, M. B., Am. Soc. Mech. Eng. Meeting. New York 4-8, 1933; Heat Transfer, 56-60 Am. Soc. Mech. Eng. (New York, 1936).
3. Manufacturers Bulletins on Heat Exchangers.
4 and 5. Private communications from oil companies.

Drilling Rig Suction Rack

Drilling wells in Illinois requires that the rigs be assembled quickly and with the minimum cost as none of the holes are very deep. This requires the elimination of every unnecessary piece of machinery and the manufacture of such items as will expedite operations. Pump and pump motors are mounted on one skid. Many of the pits for circulating fluid in the basin fields are dug by hand and others are only the width of a 6-foot blade on a bulldozer. This cuts down the suction length and Carter Oil Co. crews have devised a means for raising and lowering the mud pump suction which is part of the pump.

Suction racks as a rule are built by laying two sills across the pit and placing a pipe across them, around which is wound a rope attached to the suction.

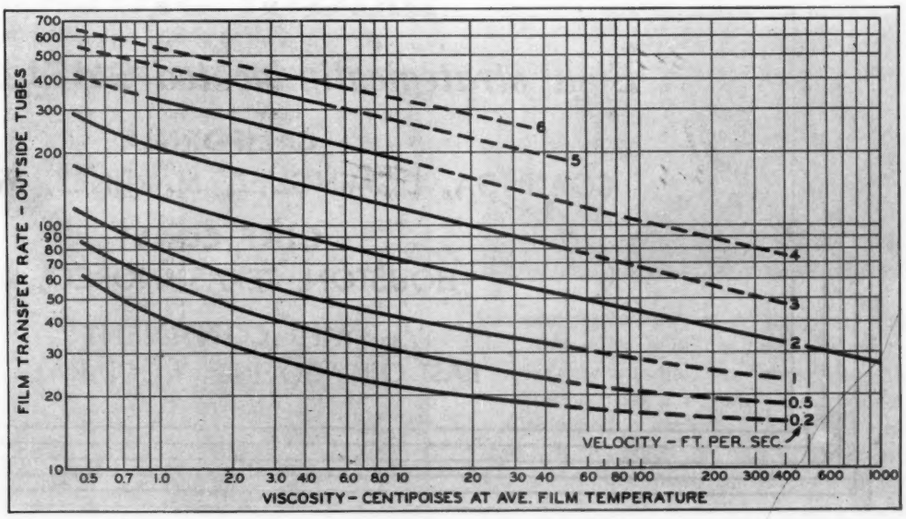


Gin poles and chain falls used for pump suction rack on Carter Oil Co. rig in Louden, Illinois, field

Rotation of the pipe raises the suction. Others build a regular windlass frame across which a pipe is laid. This requires the moving of two heavy sills from location to location in the first instance and the erection of a separate rack in the second instance.

Raising and lowering the suction is an important part of drilling in any section of the country as it thus allows the driller to select the weight of the mud he is pumping into the hole. If the mud is too heavy and the bit has a tendency to ball up, lighter mud is available by raising the suction. If a tendency to lose mud is noted, the suction can be lowered and heavier mud pumped into the hole.

Carter Oil Co. drilling crews have devised a suction rack consisting of gin poles made from 4-inch drill pipe and a set of chain falls. The gin poles are hinged to the pump skid cross member and are guyed by a chain fastened to the fluid end of the pump. The chain falls can be used to raise and lower the suction and are also useful when fastening the suction to the pump body. When it comes time to move the rig, the improvised suction rack can be used to help disconnect the suction and then can be folded back over the fluid end of the pump where they will be out of the way while loading pump on truck.



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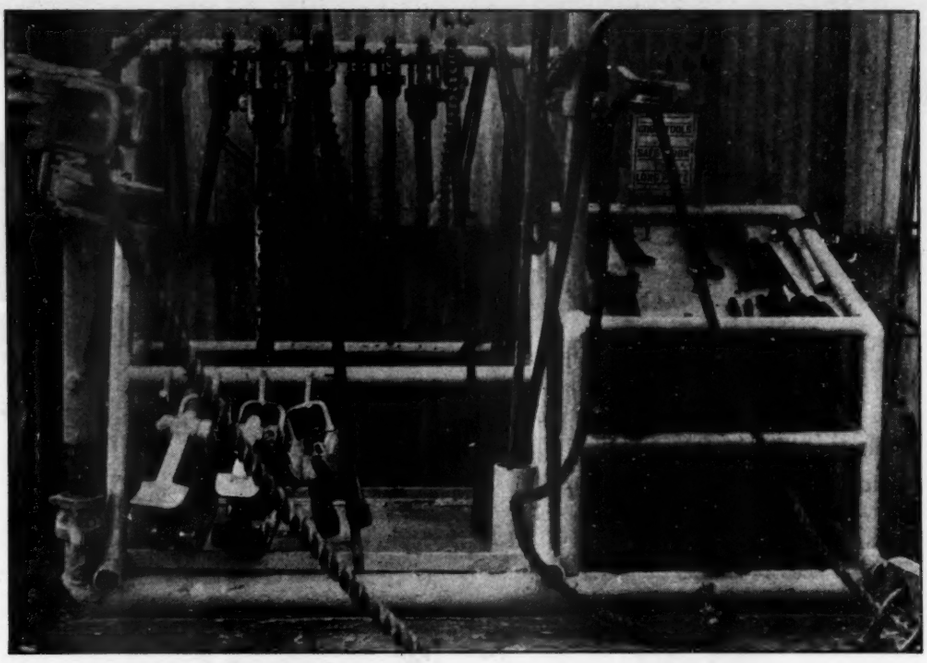
OPERATING IDEAS

Drill Pipe Measuring Device

A device provided by a Gulf Coast company makes it possible to measure length of stands of pipe in a derrick without the need of having the derrick man climb around holding a tape as is the conventional practice. The end of the tape is fastened to the end of a long rod, or light pole, in the end of which is a small hook which hooks up over the top of the stand of pipe, holding the tape while a man on the derrick floor reads the length accurately. With it the derrick man can reach the end of any pipe stand from a single position on the fourble board, where he can keep his safety belt fastened. He does not have to climb, reach or lean outward or assume any other dangerous positions. The "homemade" tool was improvised by one of the company's employes.

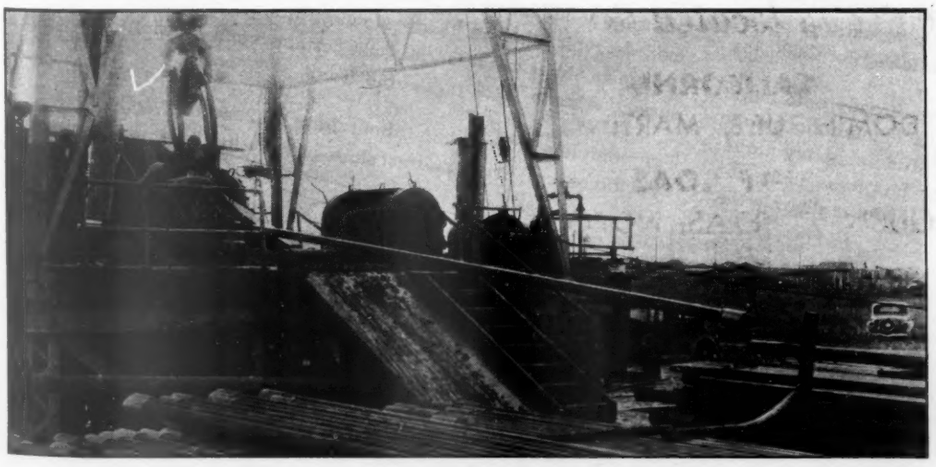


Tong Rack With Rotary Drilling Rig

A rack for tongs and other tools used on the derrick floor is provided by a Gulf Coast major company on each of its rigs. The rack is made in the company's own field shops from old pipe, and is of welded construction. It is mounted permanently on skids to facilitate moving. All tools are kept on the rack when not in use so they are not scattered around the derrick floor or lost or misplaced when the rig is being moved to another location.

Trolley Line for Moving Drill Pipe

A trolley device to facilitate laying down or making up pipe has been devised by a Gulf Coast operating company for use on all its rigs. It consists of a hook suspended on a pulley which runs on a cable strung from the back of the derrick to a pole at the end of the pipe rack. With the outer end supported by the hook, a joint of pipe can be run into place quickly and easily, saving much walking on the part of the man attending to this work.



Sliding Windows

A company operating in the K.M.A. field of North Texas has installed newly designed windows in all of its sectional steel buildings at three compressor stations recently completed there. Instead of having the windows

tilt, as most windows do in this type of building, they slide back on the inside so that the window is in the clear when open. This eliminates glass breakage when windows are slammed. Clearance is provided inside and outside of the room and workmen passing are not obstructed by windows protruding at an angle from the building walls.

JARECKI SPECIALTIES for Pumping Wells

Fig. 940
New Jarco Roller
Pull Rod Carrier

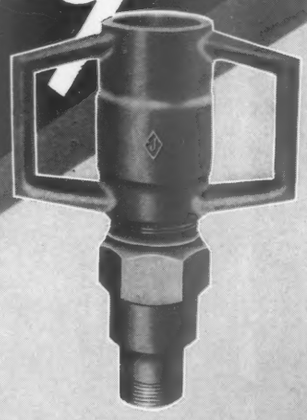
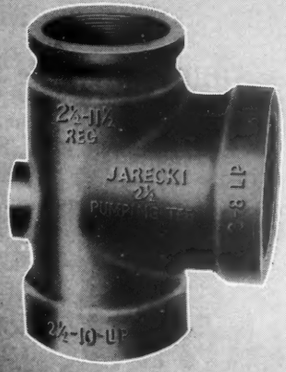
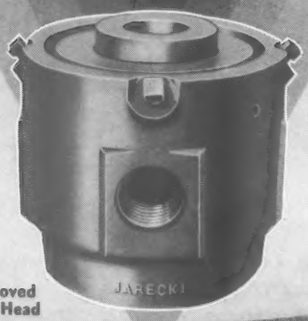


Fig. 934-K
Jarecki Erie
Improved Stuffing Box



Jarecki Pumping Tee



Jarecki Improved
Berry Casing Head

Jarecki Threadless
Hinged Bell Nipple

When you equip your wells for pumping, you can assure a saving by taking advantage of the valuable features offered by the Jarecki line of Pumping-Well Specialties.

THE JARECKI IMPROVED BERRY CASING HEAD has full-length casing and side outlet threads; is equipped with set screws which are perpendicular to bevelled edge of top, to eliminate bending and breaking of screws; has circular interior, insuring smooth passage of tubing collars. Head is made of semi-steel, tested for 2,000 lbs.

THE JARECKI PUMPING TEE screws directly onto either regular or upset thread tubing, thus eliminating swage nipples, sub-nipples and bushings. Made of heavy malleable iron, the Jarecki Pumping Tee has three times the weight and strength of an ordinary 150-lb. malleable tee.

THE JARECKI THREADLESS HINGED BELL NIPPLE clamps around the stuffing box thread band of the Jarecki Pumping Tee. Thus, the weight of the rods and shock of the elevators are carried by the body of the tee —not by its threads. Made of malleable iron.

THE NEW JARCO ROLLER PULL ROD CARRIER has an oil reservoir, located within the wheel, which holds 1/6 pint; this is sufficient oil to last at least 6 months. From the reservoir, the oil feeds slowly through a porous bronze bushing to the shaft. Dust cannot reach bearing surface. Frame is of malleable iron.

For complete information about Jarecki Pumping-Well Specialties, call at our nearest store, or write for literature.

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MANUFACTURING COMPANY
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Calculations of Back-Pressure Tests on Natural Gas Wells

By J. WILLIAM FERGUSON
Canadian River Gas Co.

A simplification of the method of calculation of back-pressure tests on natural gas wells is outlined here, which not only reduces the number of operations by elimination of some interpolations, but furnishes a means of better interpretation of some features of the back-pressure curves.

The customary method of calculating back-pressure tests is set out in the U. S. Bureau of Mines Monograph 7, "Back-Pressure Data on Natural Gas Wells and Their Application to Production Practices," by E. L. Rawlins and M. A. Schellhardt. Reference to this publication will be made from time to time in this article as simply "Monograph 7."

A flow formula derived by the author[1] for flow through slightly inclined pipe lines also holds true for vertical flow. The derivation of this formula is reviewed here, modified slightly to conform to the conditions of vertical flow.

Formula for Horizontal Flow

The Weymouth formula for horizontal flow may be written

$$P_1^2 - P_2^2 = Q^2 L / K^2 \qquad (1)$$

The differential equation which has (1) as its solution is

$$dP_f = -\frac{Q^2}{2K^2}\frac{dL}{P} \qquad (2)$$

the subscript f being used to show that this value of the infinitesimal change in pressure is that due to friction.

Now, for vertical flow, in each small-length dL there is an additional drop in pressure due to the weight of the infinitesimal column of gas dL feet in height and 1 square inch in cross-section. Denoting this additional pressure drop by dP_w,

$$dP_w = -\frac{\rho dL}{144} \qquad (3)$$

ρ being the weight of 1 cubic foot of the gas at the absolute pressure P existing in the infinitesimal length dL. Now

$$\rho = \frac{144\,G\,P}{53.34\,T} \qquad (4)$$

where G = specific gravity of gas (air = 1.00)
P = absolute pressure in pounds per sq. in.
53.34 = gas constant for air
T = absolute flowing temperature.

Then

$$dP_w = -\frac{G\,P}{53.34\,T} \qquad (5)$$

so that the total pressure drop in the length dL is

$$dP = dP_f + dP_w = -\frac{Q^2}{2K^2 P}dL - \frac{G\,P}{53.34\,T}dL \qquad (6)$$

The variables in this last expression are readily separated, and we have

$$dL = -\frac{53.34\,T}{2\,G}\,\frac{2\,P\,dP}{\frac{53.34\,T\,Q^2}{2K^2 G} + P^2} \qquad (7)$$

Let us put

$$\frac{2\,G}{53.34\,T} = M \qquad (8)$$

and, since the integration for dL is to be performed between the limits zero and L, and for dP the limits are P_1 and P_2, we have

$$\int_0^L dL = -\frac{1}{M}\int_{P_1}^{P_2}\frac{2\,P\,dP}{\frac{Q^2}{MK^2} + P^2} \qquad (9)$$

The numerator of the fraction in the right member of Equation 9 is the exact differential of the denominator, so that the integral of the fraction is the natural logarithm of the denominator, or

$$ML\Big|_0^L = -\log_e\left[\frac{Q^2}{MK^2} + P^2\right]_{P_1}^{P_2} \qquad (10)$$

Evaluating the definite integrals indicated,

$$ML = \log_e\left[\frac{\frac{Q^2}{MK^2} + P_1^2}{\frac{Q^2}{MK^2} + P_2^2}\right] \qquad (11)$$

Removing the logarithm by taking the antilog of both sides of this expression, and putting

$$ML = \frac{2\,G\,L}{53.34\,T} = S \qquad (12)$$

we have

$$e^S = \left[\frac{\frac{Q^2 L}{K^2 S} + P_1^2}{\frac{Q^2 L}{K^2 S} + P_2^2}\right] \qquad (13)$$

Multiplying out and collecting terms, we get

$$P_1^2 - e^S P_2^2 = \frac{Q^2 L}{K^2}\left[\frac{e^S - 1}{S}\right] \qquad (14)$$

for convenience we may put

$$\frac{e^S - 1}{S} = j$$

and we have

$$P_1^2 - e^S P_2^2 = \frac{Q^2 L\,j}{K^2} \qquad (15a)$$

which is of the form of Equation 1, with P_2^2 multiplied by the factor e^S and L multiplied by the factor $(e^S - 1)/S = j$.

That is, for vertical flow, the conventional Weymouth formula may be used, provided we use the multiplier for P_2^2, and instead of the actual length of the flow channel we use an "effective length," $L\,j$. This procedure automatically takes care of the weight of the flowing column of gas.

This derivation differs from that developed by Emory Kemler in his paper, "A Study of the Data on the Flow of Fluids in Pipes," presented at the annual meeting, December, 1932, of the American Society of Mechanical Engineers. However, Equation 14 may be shown to be identical with Kemler's final equation.

Values of e^S and j are readily calculated by means of logarithms or of the infinite series

$$e^S = 1 + S + \frac{S^2}{1\times2} + \frac{S^3}{1\times2\times3} + \frac{S^4}{1\times2\times3\times4} + \ldots \qquad (16)$$

$$j = \frac{e^S - 1}{S} = 1 + \frac{S}{1\times2} + \frac{S^2}{1\times2\times3} + \frac{S^3}{1\times2\times3\times4} + \frac{S^4}{1\times2\times3\times4\times5} + \ldots \qquad (17)$$

For all practical purposes, everything beyond the terms involving the cube of S may be disregarded, even for large values of GL, and for smaller values only the first three terms of each series are necessary to give accuracy within the desired limits. Values of e^S for GL from 600 to 4,000 by steps of 50 are shown in Table 1. In calculating these values a flowing temperature of 80° F. was assumed. For intermediate values of GL interpolation will prove sufficiently accurate.

In applying Equation 15a to the flow of gas in the producing string of a well the following procedure is used: If we put P_s (the pressure at the

TABLE 1—VALUES OF e^S CORRESPONDING TO GL OF PRODUCING STRING

GL	e^S	GL	e^S	GL	e^S	GL	e^S
600	1.043	1,500	1.110	2,400	1.181	3,300	1.257
650	1.046	1,550	1.113	2,450	1.185	3,350	1.262
700	1.050	1,600	1.117	2,500	1.190	3,400	1.266
750	1.053	1,650	1.121	2,550	1.194	3,450	1.271
800	1.057	1,700	1.125	2,600	1.198	3,500	1.275
850	1.061	1,750	1.129	2,650	1.202	3,550	1.279
900	1.064	1,800	1.133	2,700	1.206	3,600	1.284
950	1.068	1,850	1.137	2,750	1.210	3,650	1.288
1,000	1.072	1,900	1.141	2,800	1.215	3,700	1.293
1,050	1.076	1,950	1.145	2,850	1.219	3,750	1.297
1,100	1.079	2,000	1.149	2,900	1.223	3,800	1.302
1,150	1.083	2,050	1.153	2,950	1.227	3,850	1.306
1,200	1.087	2,100	1.157	3,000	1.232	3,900	1.311
1,250	1.091	2,150	1.161	3,050	1.236	3,950	1.315
1,300	1.094	2,200	1.165	3,100	1.240	4,000	1.320
1,350	1.098	2,250	1.169	3,150	1.244	....	....
1,400	1.102	2,300	1.173	3,200	1.249	....	....
1,450	1.106	2,350	1.177	3,250	1.253	....	....

Note: $S = 2\,G\,L / 53.34\,T$, and T is here assumed to be 80° F.

[1] A Mathematical Analysis of the Effect of Differences in Elevation on Pipe Line Flow Formulae, Gas Age-Record and Natural Gas, July 11 and 18, 1936.

sand face) for P_1, and P_w (the pressure at the well-head) for P_2, we have

$$P_s^2 - e^s P_w^2 = \frac{Q^2 L j}{K^2} \quad (15)$$

Let us put

$$R^2 = P_s^2 - e^s P_w^2 = \frac{Q^2 L j}{K^2} \quad (18)$$

then

$$R = \frac{Q}{K}\sqrt{Lj} = \sqrt{P_s^2 - e^s P_w^2} \quad (19)$$

From Equation 3, page 155 of Monograph 7,

$$K = 48{,}960\,\frac{d^{8/3}}{\sqrt{G}} \quad (20)$$

so that

$$R = Q\left[\frac{\sqrt{G L j}}{48{,}960\,d^{8/3}}\right] \quad (21)$$

Q being defined now as cubic feet per day at 14.4 pounds per square inch, 60° F., with the flowing temperature assumed to be 80° F., and d is the internal diameter of the flow string in inches.

Now if we consider Q in millions of cu. ft. per day, and put

$$\frac{\sqrt{GL\,j}}{0.04896\,d^{8/3}} = F_q \quad (22)$$

$$R = Q\,F_q \quad (23)$$

Values of F_q for GL from 600 to 4,000 by steps of 100, and for the various casing sizes considered in Monograph 7, are shown in Table 2. This table may also be interpolated for intermediate values of GL. Then, for a given well, the values of R are simply F_q times Q in millions.

Another method for the calculation of R is that used in Monograph 7. In this method all casing sizes are referred to the equivalent length of 1-inch tubing, and a table is used showing values of R corresponding to these various equivalent lengths and various quantities of gas. (Table 34, page 144, Monograph 7). It is possible to use this same table in connection with Equation 15, providing we use the values of GLj nstead of GL in obtaining the equivalent length of 1-inch tubing. For those who may prefer the use of this table to the method set out by Equation 23, two tables are given here showing the "effective equivalent length of 1-inch tubing." That is, the value of GLj for 1 inch corresponding to the GLj of the producing string.

TABLE 3—EQUIVALENT GLj OF PRODUCING STRING

(GLj for 1-inch tubing equivalent to *GLj* of producing string)

Nominal sizes from 1¼ inches to 5⅞ inches inclusive.

	Nominal size and I.D of producing string, inches							
	1¼	1½	2	2½	3	3½	4	5⅞
GL of producing string	1.380	1.610	2.041	2.469	3.068	3.548	4.026	5.192
	—Equivalent *GLj* of 1-inch tubing—							
600	142	62	18	6.4	2.0	0.92	0.47	0.12
700	166	73	21	7.5	2.3	1.1	.55	.14
800	190	84	24	8.6	2.7	1.2	.63	.16
900	215	95	27	9.7	3.0	1.4	.71	.18
1,000	240	105	30	11	3.4	1.6	.79	.20
1,100	265	116	33	12	3.7	1.7	.88	.23
1,200	290	127	36	13	4.1	1.9	.96	.25
1,300	315	138	39	14	4.4	2.0	1.0	.27
1,400	340	150	42	15	4.8	2.2	1.1	.29
1,500	366	161	45	16	5.2	2.4	1.2	.31
1,600	392	172	49	18	5.5	2.5	1.3	.33
1,700	418	184	52	19	5.9	2.7	1.4	.36
1,800	444	195	55	20	6.3	2.9	1.5	.38
1,900	470	207	58	21	6.6	3.1	1.6	.40
2,000	497	218	62	22	7.0	3.2	1.6	.42
2,100	524	230	65	24	7.4	3.4	1.7	.45
2,200	550	242	68	25	7.8	3.6	1.8	.47
2,300	577	254	72	26	8.1	3.8	1.9	.49
2,400	605	266	75	27	8.5	3.9	2.0	.52
2,500	632	278	78	28	8.9	4.1	2.1	.54
2,600	660	290	82	30	9.3	4.3	2.2	.56
2,700	688	302	85	31	9.7	4.5	2.3	.59
2,800	716	315	89	32	10	4.7	2.4	.61
2,900	744	327	92	33	11	4.8	2.5	.63
3,000	773	340	96	35	11	5.0	2.6	.66
3,100	801	352	99	36	11	5.2	2.7	.68
3,200	830	365	103	37	12	5.4	2.7	.71
3,300	859	378	107	39	12	5.6	2.8	.73
3,400	888	390	110	40	13	5.8	2.9	.76
3,500	918	403	114	41	13	6.0	3.0	.78
3,600	947	416	118	43	13	6.2	3.1	.81
3,700	977	429	121	44	14	6.3	3.2	.83
3,800	1,010	443	125	45	14	6.5	3.3	.86
3,900	1,040	456	129	47	15	6.7	3.4	.88
4,000	1,070	470	133	48	15	6.9	3.5	.91

Table 3 of this paper shows equivalent values of 1-inch tubing for casing sizes from 2½ inches to 5⅞ inches; it corresponds to Table 33 on page 143 of Monograph 7. That is, the table was calculated with the actual GL as the argument, but in calculating the equivalent GLj of 1-inch tubing, each GL was multiplied by its corresponding value of j. In this way, the table shows the effective GL of 1-inch tubing which is equivalent to the effective GL of the producing string.

Table 4 shows the same thing for casing sizes from 6 inches to 10 inches, with the argument the equivalent GLj of 1-inch tubing, and the actual values of GL for the producing string corresponding to each, or, rather, the limits between which the equivalent of 1 inch is the value shown. For instance, referring to Table 4, suppose we had a GL of 2,250 with 6⅝-inch casing. In the column marked 6⅝ inches, we find that 2,250 lies between 2,196 and 2,358, which are the limits for an equivalent GLj of 0.13. Similarly, a GL of 3,100 with 10-inch casing lies between 2,253 and 3,579 so that the equivalent 1-inch is 0.02.

The use of either Table 3 or 4 in connection with Table 34 of Monograph 7 will give values of R which differ from the values given by Equation 23 only because of the interpolation involved.

Regardless of what method we use in calculating R, the probable difference in the final results will be negligible.

From Equation 18

$$P_s^2 - e^s P_w^2 = R^2$$

$$P_s^2 = e^s P_w^2 + R^2 \quad (24)$$

That is, the square of the pressure at the sand face equals the sum of the product of e^s by the square of the working pressure, and the square of R.

If the well is shut in and the pressure at the well head is allowed to stabilize, there is no flow in the casing or in the sand toward the well bore, so that the bottom-hole pressure is the same as the formation pressure P_f. For this condition of zero flow,

$$P_s^2 - e^s P_c^2 = 0$$

or

$$P_f^2 = P_s^2 = e^s P_c^2 \quad (25)$$

That is, if we square the shut-in, or rock-pressure P_c, and multiply it by the value of e^s, we have the square of the formation pressure directly, without any interpolation of tables to get the weight of the gas column.

As an example of the method, let us recalculate the data given on page 26 of Monograph 7.

Producing string = 8¼-inch casing
Specific gravity = 0.64
L = 1,725 feet, GL = 1,100
Shut-in pressure at well head = 420 lb./sq. in gauge
Barometer = 13 lb. per sq. in.

Reading	Working pressure lbs. ga.	Q Mcf. per day
1	405	5,090
2	391	8,740
3	370	12,840
4	343	17,180

In Table 1 we find, for GL of 1,100, e^s = 1.079, and in Table 2 in the column marked 8¼ inches. F_q = 2.49. We may tabulate our calculations as shown in Table 5.

These figures show substantial agreement with those in the bureau monograph. Any differences arise from the fact that their interpolations for the weight of the flowing gas column and the pressure drop due to friction are to the nearest pound;

TABLE 2

Values of $F_q = \frac{R}{Q} = \frac{\sqrt{P_s^2 - e^s P_w^2}}{Q}$

Q in millions of cu. ft. per day at 14.4 lb. *Pb*, 60° *Tb*, 80° T_f

GL	1" 1.049	1¼" 1.380	1½" 1.610	2" 2.041	2½" 2.469	3" 3.068	3½" 3.548	4" 4.026	5⅞" 5.192	6" 6.065	6¼" 6.287	6⅝" 6.652	8¼" 8.249	10" 9.950
600	445	214	142	75.4	45.4	25.4	17.3	12.3	6.25	4.13	3.75	3.23	1.82	1.10
700	481	232	154	81.8	49.1	27.5	18.7	13.3	6.76	4.47	4.06	3.49	1.97	1.19
800	515	248	165	87.4	52.6	29.5	20.0	14.3	7.24	4.79	4.35	3.74	2.11	1.28
900	548	264	175	92.5	55.9	31.3	21.3	15.2	7.70	5.09	4.62	3.98	2.24	1.36
1,000	579	279	185	98.1	59.0	33.1	22.5	16.0	8.13	5.37	4.88	4.20	2.37	1.44
1,100	608	293	194	103	62.0	34.8	23.6	16.8	8.54	5.65	5.13	4.41	2.49	1.51
1,200	636	306	203	108	64.9	36.4	24.7	17.6	8.94	5.91	5.37	4.62	2.60	1.58
1,300	663	319	212	112	67.6	37.9	25.7	18.4	9.32	6.16	5.59	4.81	2.71	1.65
1,400	689	332	220	117	70.3	39.4	26.7	19.1	9.69	6.40	5.81	5.00	2.82	1.71
1,500	715	344	228	121	72.9	40.9	27.7	19.8	10.0	6.64	6.03	5.19	2.92	1.77
1,600	740	356	236	125	75.5	42.3	28.7	20.5	10.4	6.87	6.24	5.37	3.02	1.83
1,700	764	368	244	129	77.9	43.7	29.6	21.2	10.7	7.09	6.44	5.54	3.12	1.89
1,800	787	379	251	133	80.3	45.0	30.5	21.8	11.1	7.31	6.64	5.71	3.22	1.95
1,900	810	390	258	137	82.7	46.3	31.4	22.4	11.4	7.52	6.84	5.88	3.31	2.01
2,000	832	401	266	141	85.0	47.6	32.3	23.0	11.7	7.73	7.03	6.04	3.40	2.06
2,100	855	411	273	145	87.2	48.9	33.2	23.7	12.0	7.94	7.21	6.20	3.49	2.12
2,200	876	422	280	149	89.4	50.1	34.0	24.3	12.3	8.14	7.39	6.36	3.58	2.17
2,300	898	432	286	152	91.6	51.3	34.8	24.9	12.6	8.34	7.57	6.52	3.67	2.23
2,400	919	442	293	156	93.7	52.5	35.6	25.4	12.9	8.53	7.75	6.67	3.76	2.28
2,500	940	452	300	159	95.8	53.7	36.4	26.0	13.2	8.72	7.93	6.82	3.84	2.33
2,600	960	462	306	163	97.9	54.9	37.2	26.6	13.5	8.91	8.10	6.97	3.93	2.38
2,700	980	472	313	166	100	56.0	38.0	27.1	13.8	9.10	8.27	7.12	4.01	2.43
2,800	1,000	481	319	169	102	57.1	38.8	27.7	14.1	9.28	8.43	7.26	4.09	2.48
2,900	1,019	491	325	173	104	58.3	39.5	28.2	14.3	9.46	8.60	7.40	4.17	2.53
3,000	1,038	500	331	176	106	59.4	40.3	28.8	14.6	9.64	8.76	7.54	4.25	2.58
3,100	1,058	509	337	179	108	60.5	41.0	29.3	14.9	9.82	8.92	7.68	4.33	2.62
3,200	1,077	518	343	183	110	61.5	41.8	29.8	15.1	10.0	9.08	7.82	4.40	2.67
3,300	1,095	527	349	186	112	62.6	42.5	30.3	15.4	10.2	9.24	7.95	4.48	2.72
3,400	1,114	536	355	189	114	63.7	43.2	30.8	15.7	10.3	9.40	8.08	4.55	2.76
3,500	1,132	545	361	192	116	64.7	43.9	31.3	15.9	10.5	9.55	8.21	4.63	2.81
3,600	1,150	553	367	195	117	65.7	44.6	31.8	16.2	10.7	9.70	8.34	4.70	2.85
3,700	1,167	562	373	198	119	66.7	45.3	32.3	16.4	10.8	9.85	8.47	4.77	2.90
3,800	1,185	570	378	201	121	67.8	46.0	32.8	16.7	11.0	10.0	8.60	4.85	2.94
3,900	1,203	579	384	204	123	68.8	46.7	33.3	16.9	11.2	10.2	8.73	4.92	2.98
4,000	1,221	588	390	207	125	69.8	47.4	33.8	17.2	11.3	10.3	8.86	4.99	3.03

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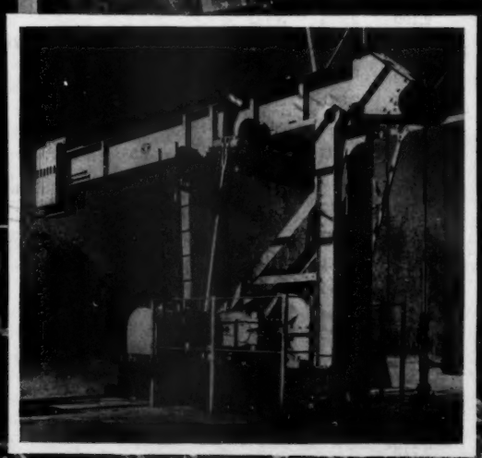

both of these interpolations are eliminated by this new method.

There is a possibility opened up by this method of predicting the amount of gas a well will deliver against a given well head working pressure, with different casing or tubing sizes, once the back pressure curve has been plotted. The theory behind this is as follows:

The back-pressure curves of most gas wells may be expressed by

$$Q = C\ (P_t^2 - P_s^2)^n$$

or

$$P_t^2 - P_s^2 = (Q / C)^{1/n} \qquad (26)$$

And the flow through the casing is given by

$$P_s^2 - e^{2s}P_w^2 = \frac{Q^2 L\, j}{K^2} \qquad (14)$$

Adding (15) and (26).

$$P_t^2 - e^{2s}P_w^2 = \left[\frac{Q}{C}\right]^{1/n} + \frac{Q^2 L\, j}{K^2} \qquad (27)$$

Now, if a plot of Q against $(P_t^2 - e^{2s}P_w^2)$ is made on logarithmic paper in a manner similar to the customary plot of Q against $(P_t^2 - P_s^2)$, the result is so nearly a straight line, for all cases where the usual back-pressure graph is also a straight line, that the error introduced by considering it to be straight is less than the experimental errors involved in the test. The use of a straight line to represent (27) is mathematically indefensible, but for the ranges of quantities and squared-pressure differences usually encountered in testing wells, the resulting graph is so easily used and so nearly correct that the error of using the approximation is offset by its practical advantage.

For instance, suppose we have a back-pressure test represented by a straight-line graph. Suppose also that the well is equipped with 10-inch casing and that it is desired to know the comparison between the amount of gas which could be delivered against a given working pressure, through an 8¼- and through a 6-inch producing string. To do this, pick off the curve two or more values of Q with the corresponding values of $(P_t^2 - P_s^2)$. Look up in Table 2 the value of F_q for both the 8¼-inch and the 6-inch strings. Then multiply the chosen values of Q by the values of F_q for both casing sizes. Square these values of R and add to the corresponding values of $(P_t^2 - P_s^2)$, and plot the results. This gives a straight line for both sizes of pipe.

Now, knowing the square of the formation pressure, all we need to do is to multiply the square of the chosen working pressure by the value of e^{2s} for our given well, and subtract this product from the square of the formation pressure. Entering the logarithmic graph with this value of squared pressure difference, we may read off directly from the chart the quantity of gas we may expect through these sizes of producing string. Or, if the performance of the well is desired with it equipped as it is, simply plot the calculated values of $(P_t^2 - e^{2s}P_w^2)$ from the original test, and draw the best straight line through these points.

As an example, see Figure 1. Line *A* represents a back-pressure test on a well in the Panhandle field of Texas. The values of the various constants

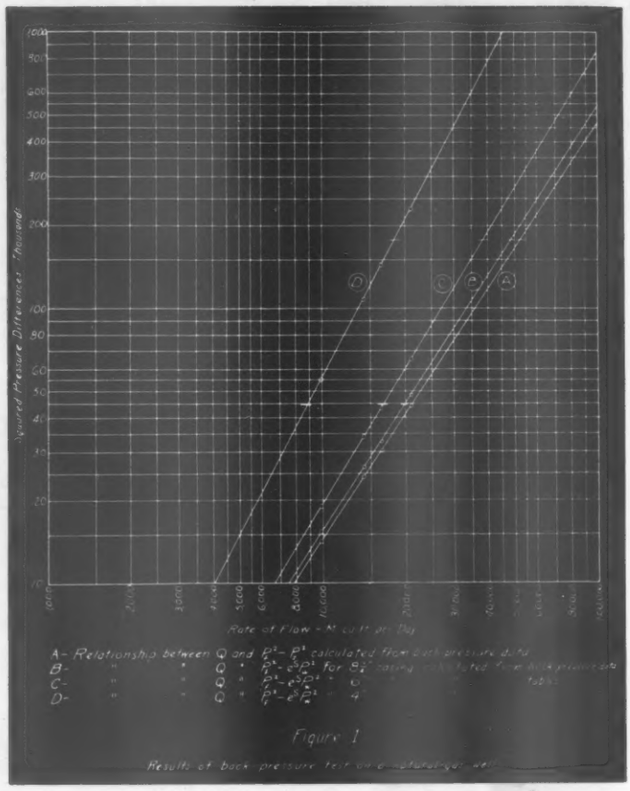
Squared Pressure Differences - Thousands
Rate of Flow - M cu ft per day
A- Relationship between Q and Pt²- Ps² calculated from back pressure data
B-
C-
D-

Figure 1

Results of back-pressure test on a Panhandle gas well

TABLE 4—EQUIVALENT GLj OF PRODUCING STRING

(*GLj* for 1-inch tubing equivalent to *GLj* of producing string) Nominal sizes from 6" to 10" inclusive

Equivalent *GLj* of 1" tubing	Nominal size and I.D. of producing string, inches: 6 / 6.065	6¼ / 6.287	6⅝ / 6.652	8¼ / 8.249	10 / 9.950
	GL of producing string				
0.01	....	....	....	296	791
.02	....	....	....	870	2,253
.03	....	....	466	1,422	3,579
.04	....	484	649	1,954	4,792
.05	512	618	829	2,467	....
.06	624	752	1,007	2,962	....
.07	735	885	1,183	3,441	....
.08	845	1,016	1,357	3,906	....
.09	954	1,147	1,528	4,359	....
.10	1,062	1,276	1,697	....	....
.11	1,169	1,405	1,866	....	....
.12	1,275	1,531	2,032	....	....
.13	1,381	1,657	2,196	....	....
.14	1,486	1,782	2,358	....	....
.15	1,590	1,905	2,518	....	....
.16	1,694	2,027	2,677	....	....
.17	1,797	2,148	2,834	....	....
.18	1,898	2,269	2,989	....	....
.19	1,999	2,389	3,142	....	....
.20	2,099	2,508	3,293	....	....
.21	2,199	2,624	3,442	....	....
.22	2,299	2,741	3,591	....	....
.23	2,398	2,857	3,739	....	....
.24	2,496	2,971	3,886	....	....
.25	2,593	3,085	4,029	....	....
.26	2,689	3,198	....	....	....
.27	2,785	3,310	....	....	....
.28	2,880	3,422	....	....	....
.29	2,975	3,532	....	....	....
.30	3,069	3,641	....	....	....
.31	3,162	3,750	....	....	....
.32	3,255	3,858	....	....	....
.33	3,348	3,965	....	....	....
.34	3,439	4,070	....	....	....
.35	3,530	....	....	....	....
.36	3,621	....	....	....	....
.37	3,712	....	....	....	....
.38	3,801	....	....	....	....
.39	3,890	....	....	....	....
.40	3,978	....	....	....	....
	4,063	....	....	....	....

TABLE 5—RESULTS OF CALCULATIONS

(All squares in thousands)

Shut-in well head pressure absolute (P_c)	P_c^2	Square of formation pressure $P_t^2 = e^{2s}P_c^2$	Working pressure absolute (P_w)	P_w^2	$e^{2s}P_w^2$	R	R^2	P_s^2
433	187.5	202.3	418	174.7	188.5	13	0.2	188.7
...	....	....	404	163.2	176.1	22	0.5	176.6
...	....	....	383	146.7	158.3	32	1.0	159.3
...	....	....	356	126.7	136.7	43	1.8	138.5

PLOTTING DATA

(All squares in thousands)

Reading	P_t^2	P_s^2	$P_t^2 - P_s^2$	Monograph 7	Q Mcf. per day
1	202.3	188.7	13.6	13.3	5,090
2	....	176.6	25.7	26.1	8,740
3	....	159.3	43.0	43.3	12,840
4	....	138.5	63.8	63.4	17,180

CALCULATIONS 1

(All squares in thousands)

Shut-in well head pressure absolute (P_c)	P_c^2	Square of formation pressure $P_t^2 = e^{2s}P_c^2$	Working absolute pressure (P_w)	P_w^2	$e^{2s}P_w^2$	R	R^2	P_s^2
397	157.6	176.0	380	144.0	160.8	30	0.9	161.7
...	....	....	366	133.9	149.6	43	1.8	151.4
...	....	....	358	128.2	143.2	49	2.4	145.6
...	....	....	338	114.2	127.6	63	4.0	131.6

PLOTTING DATA

(All squares in thousands)

Reading	P_t^2	P_s^2	$P_t^2 - P_s^2$	$P_t^2 - e^{2s}P_w^2$	Q Mcf. per day
1	176.0	161.7	14.3	15.2	9,895
		151.4	24.6	26.4	14,130
		145.6	30.4	32.8	16,370
		131.6	44.4	48.4	21,000

CALCULATIONS 2

(All squares in thousands)

Reading	$P_t^2 - P_s^2$	4-inch producing string: R	R^2	$P_t^2 - e^{2s}P_w^2$	6-inch producing string: R	R^2	$P_t^2 - e^{2s}P_w^2$
1	14.2	203	41.2	55.3	68	4.8	19.0
2	24.5	290	84.1	108.6	97	9.6	34.1
3	30.2	336	112.9	143.1	112	12.5	42.7
4	44.2	431	185.8	230.0	114	20.7	64.9

of the well are:

Producing string = 8¼ inches
Specific gravity = 0.70
L = 2,277 feet, GL = 1,594
Shut-in pressure at well head = 384 lb./sq.in. gauge
Barometer = 13 lb. per sq. in.
e^s = 1.117 F_q = 3.01

TEST DATA

Reading	Working pressure lbs. ga.	Q Mcf. per day
1	367	9,895
2	353	14,130
3	345	16,370
4	325	21,000

(See Calculations 1.)

Line *B*, Figure 1, is the plot of Q against $(P_t^2 - e^s P_w^2)$.

Now, if it were desired to plot a graph for 4-inch and 6-inch producing strings for this well, the process would be as follows:

The value of F_q for the 4-inch is 20.5, and for the 6-inch is 6.86. (See Calculations 2.)

Lines "C" and "D," Figure 1, are the plots for the 4-inch and 6-inch respectively. It will be noted that these points lie as closely on straight lines as do the points in line "A."

Suppose, now, that we want to know how much gas the well would deliver with a working pressure of 330 pounds per square inch gauge. We make the following calculations: $P_t^2 = 176.0$; P_w abs. = 343; $P_w^2 = 117.7$; $e^s P_w^2 = 131.4$; $P_t^2 - e^s P_w^2 = 44.6$. Entering the graph with this value of 44.6 for the squared pressure difference, we get the following values of Q:

Through 4-inch string ..... 8,900 Mcf. per day
Through 6-inch string ..... 16,600 Mcf. per day
Through 8¼-inch string ..... 19,800 Mcf. per day

By this approximation we have eliminated the cut-and-try process which would have been involved had we used the conventional methods, and the results are sufficiently near the correct mathematical solution as to be practically correct. For extremely wide ranges of quantities, there may be sufficient curvature that it should be taken into account. In this case, a number of points should be plotted and the best curve drawn through the points. For most cases, however, the portion of the graph usually taken into account in back-pressure tests is so small that the straight line is a sufficiently close approximation.

We may also gain an idea of the open flow of the wells through the various sizes of casings by entering the graph with a value of $P_t^2 - e^s P_w^2$ equal to P_t^2. In Figure 1 these open flows are:

Through 4-inch string ..... 18,300 Mcf. per day
Through 6-inch string ..... 38,500 Mcf. per day
Through 8¼-inch string ..... 47,000 Mcf. per day

This well was gauged through the 8¼-inch with pitot tube a month before this back-pressure test, and no gas was produced between that time and the time of this test. The pitot tube open flow with a 20-minute blow was 56,600 Mcf. per day. The difference of 9,600 Mcf. could easily be explained by the fact that the 20-minute pitot tube open flow did not represent a condition of stabilized flow from the formation to the well bore.

Summary: This paper has presented:

1. A method of calculating back-pressure data, possessing the advantages of greater accuracy and simpler calculations.

2. A method of determining the production to be expected from a well if the casing or producing string size were to be changed.

The author takes this opportunity to express appreciation for the helpful suggestions and criticism of E. S. Burnett, U. S. Bureau of Mines, Cryogenic Laboratory, Amarillo, Tex. Also, acknowledgement is made for the reviewing of the paper by W. B. Berwald and M. A. Schellhardt of the U. S. Bureau of Mines Petroleum Experiment Station, Bartlesville, Okla., and E. L. Rawlins, Union Producing Co., Houston, Tex., whose original work furnished the basis for this present study.

DIAMOND CORE DRILLING

(Continued from Page 36)

on all sides. This has a tendency to trap any fluid in the core until this pressure is released. Highly saturated cores when first pulled out will show a perfect circle of oil just inside the outside diameter of the core.

A most important part of the core barrel is the device which is provided to break the core off at the bottom and for holding it in the inner tube while being hoisted. The core is broken and held by a core lifter. This consists of a ring so constructed that it will grip the core near its base whenever the rods are raised. The core lifter fits into a tube termed a "lifter sub," so grooved that while it allows the core lifter to go down over the core, it will not permit it being raised. This sub, being about 4 inches long and the same diameter as the outer barrel, screws on between the bit and the outer tube.

The Coring of a Well

Let us suppose a producer wishes to take a diamond core of the oil sand from a well approximately 1,800 feet deep. He drills the well with regular cable tools, stopping the drilling 5 to 10 feet above the sand. Shutting the well down at this point will usually take care of any error in estimating the top of the sand and avoid drilling into the sand itself. Some producers prefer to core a few feet of the formation above the sand in case there is need to set a packer.

Running 3½-inch casing.—When ready to core, the drill stem is either tied back to the mast or laid down on the ground. The cable is taken off the bull wheels. A 1¼-inch tubing line is put on the bull wheels to run the string of 3½-inch casing. With this size line only a tubing hitch is required to run 1,800 feet of this pipe. This casing is placed in the well to stop any cavings of the walls of the 6¼-inch hole from falling in on the core barrel while it is being rotated. It also forms a 3½-inch hole which brings cuttings to the surface faster with a smaller quantity of water than would be necessary in the 6¼-inch hole. This pipe serves also to keep the core barrel straight at the start of coring operations.

Filling hole.—With the casing run and set on bottom, a stream of water is directed down the well from the engine tank to fill the hole before coring is started.

Setting machine.—The machine is now rolled up onto the rig floor with the hydraulic placed directly over the hole. The hind wheels of the machine are removed and blocking substituted to give a more stable footing over the hole. This end of the machine is bolted either side under the rig floor sills to hold the weight while running and pulling the drill rods, and also to keep the machine from moving horizontally while coring. The hoisting drum on the machine is built directly in back of the hydraulic. A wire line for pulling rods is run from this drum over the 3-foot hoisting pulley which is hung at the top of the mast on the 1¼-inch tubing line.

Drill rods.—A rod rack long enough to hold 40 feet of drill rods is built. The rods are screwed together in two 20-foot sections and can be quickly and neatly stacked on this rack.

Water supply.—The water pump on the coring machine which circulates the coring water is a 3½- by 5-inch duplex pump. The suction on this is connected to the engine cooling tank which acts as a reservoir. This tank in turn is supplied by a spring or a water well, the source of water being taken from the most convenient place. About 100 bbls. of water per day is required to make one run cutting 20 feet of core.

Running rods.—Now the rods are ready to run into the hole. The core barrel is assembled and the diamond bit screwed onto the bottom. This is started down the well with drill rods being screwed on and lowered into the hole rapidly.

Coring.—To run 1,800 feet of drill rods generally requires about one hour. When the barrel nears bottom the last rod is fed down through the hydraulic, which is directly over the hole. A water swivel connected by 50 feet of metallic hose to the water pump is substituted for the hoisting plug. The chuck jaws which grip the drill rods are tightened and the operator slowly rotates his rods while letting the bit gently on bottom. Great care is used in starting the coring operation. After a foot or so of core has been cut, the driller then speeds up his machine. He feeds his rods down with the hydraulic as fast as the bit will cut properly. The shale and shell will core slowly, but the sand will usually cut rapidly. This hydraulic will feed about 2 feet of rods before being completely down.

Breaking off core.—Now that there are 20 feet of core in the inner barrel, the rods are raised by means of the hydraulic to break off the core. The lifter shown in position in Figure 3 grips the core tighter and tighter as it is raised and finally breaks it off at the bottom.

Pulling rods.—For pulling rods, the hydraulic is moved back from the hole and this operation is started. This procedure is done almost as rapidly as running in. The rods are carried out and laid on the rack by the tool dresser. The average time for pulling 1,800 feet of core rods is about one and one-half hours.

Taking core from barrel.—As the core barrel appears, it too is laid on the rod rack and the bit and head are removed. This enables the inner tube, holding the core, to be pushed out. The inner barrel is then carried to the core box.

Sampling core.—First, the core is rapidly marked in feet, according to its position in the formation. Then saturation samples of 3 inches in length, one for each foot of sand cored, are picked, numbered, and logged as to exact location. These are now broken out with a hammer and chisel. As they are placed in tightly sealed jars, wooden plugs, properly numbered, are dropped into the space left by these samples. In case the producer or laboratory wishes flooding samples, these are broken out directly below the saturation samples, located and marked in the same manner. The balance of the core is put into tins, which are 30 inches in length, to be delivered to the laboratory for porosity and permeability determinations. These tins are closed on each end with wooden plugs wired into place, the plugs on one end being marked with the name of the company, property, well number, and tin number.

Average Coring Time

The average coring time for this well at 1,800 feet, with 80 feet to core, will run as follows:

1 day —Taking off cable, etc., and running 3½-inch casing
1 day —Setting up machine and running drill rods
4 days—Coring at 20 feet of core per day
1 day —Tearing down and pulling 3½-inch casing
7 days total time

This schedule will hold true for wells from 1,000 to 2,500 feet in depth. With cores taken under 1,000 feet, a day or two can usually be cut off the average time.

Tearing down usually requires one day. If this cannot be completed in one day, at least the machine can be moved off the rig floor and the 3½-inch casing pulled. This will enable the bailing and reaming of the hole to be started on the next following tour.

There is no class of work to which the old adage, "The more hurry the less speed," applies more fully than to diamond drilling. For when the operator hurries, he is liable to drop rods, twist off the barrel from applying too much pressure, lose diamonds and burn up the bit.

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Mid-Continent Refinery Crude Runs Remain Practically Unchanged

Total estimated daily refinery crude runs in the Mid-Continent area during January remain practically unchanged. Crude runs this month total 503,405 bbls., compared with 329,710 bbls. one year ago; and compared with 503,530 bbls. for December, a decrease of 125 bbls. in January.

Oklahoma

Oklahoma refinery runs have been increased at several plants, although the Barnsdall Oil Co. refinery at Barnsdall has again been shut down, which brings the estimated total for January down from 141,125 bbls. in December to 139,650 bbls. in January. Refineries increasing their crude runs in this area include the Bell Oil & Gas Co. at Grandfield, up 500 bbls. daily over December; Cities Service Oil Co. at Ponca City, from 8,300 bbls. last month to 8,500 bbls. in January; the Continental Oil Co. at Ponca City has increased its daily runs by approximately 2,000 bbls. compared with December; and the Sunray Oil Co. plant at Allen, from 3,600 bbls. daily in December to 4,300 bbls. in January.

Kansas

Refinery crude runs in Kansas are reported as practically unchanged, with a total of 123,200 bbls. daily in January compared with 123,950 bbls. in December.

Southwest Texas

Estimated daily refinery runs for Southwest Texas will remain unchanged over last month, with a total of 15,500 bbls. daily throughput.

West Texas and Panhandle

The West Texas and Panhandle area reports a small decrease in its estimated daily crude runs for January. With generally lowered crude runs, the total for the month is 74,900 bbls., compared with 79,390 bbls. in December. The Cosden Oil Co. refinery at Big Spring showed a slight increase with 10,500 bbls. daily throughput in January, compared with 10,000 bbls. in December.

Mid-Continent Crude Runs

Average Daily (Barrels)

(Advance estimate compiled by The Oil and Gas Journal)

	1937	1938	1939
January	531,535	529,710	503,405
February	541,790	507,985	.....
March	533,875	491,935	.....
April	558,385	532,120	.....
May	572,855	527,315	.....
June	593,625	540,005	.....
July	605,640	557,520	.....
August	624,475	554,810	.....
September	625,485	555,695	.....
October	619,210	531,325	.....
November	592,170	524,035	.....
December	544,040	503,530	.....

Operations by Refinery District

Daily crude runs

	Jan.	Dec.	Decr.
Arkansas	25,530	25,200	*330
East Texas	43,325	40,925	*2,400
Kansas	123,200	123,950	750
N. Central Texas	35,600	31,690	*3,910
North Louisiana	45,700	45,750	50
Oklahoma	139,650	141,125	1,475
Southwest Texas	15,500	15,500	.....
W. Texas Panhandle	74,900	79,390	4,490
Total	503,405	503,530	125

*Increase.

East Texas

East Texas refineries are reopening generally this month, following a short slump in activities in the field. Estimated total daily crude runs for January is 43,325 bbls., an increase of 2,400 bbls.

These refiners have enjoyed an unusually heavy demand for gasoline particularly during the past two months, some of the material moving to other refiners for blending.

North Central Texas

Daily crude runs in the North Central Texas area are up 3,910 bbls. this month, with a total of 35,600 bbls., compared with 31,690 bbls. for December. This gain is due to the reopening of the Waggoner Refining Co. at Vernon by the W. T. Waggoner estate, with a daily throughput of 4,000 bbls., and also the new refinery of the Mankins Refining Co. at Mankins, with a daily crude run of 1,000 bbls. Several of the other plants reported slight decreases for January.

North Louisiana and Arkansas

North Louisiana crude runs in January remain unchanged, with a total of 45,700 bbls. daily, compared with 45,750 bbls. in December. Estimated daily refinery runs in Arkansas for the month are 25,530 bbls., compared with 25,200 bbls. in December. Increased crude runs were reported by the Macmillan Petroleum Corp. at Norphlet, from 2,000 bbls. daily in December to 2,200 bbls. in January; and the Root Refining Co., El Dorado, from 5,900 bbls. in December to 6,130 bbls. in January.

Estimated Daily Average Mid-Continent Refinery Crude Runs for January

OKLAHOMA

Company and location—	Daily capacity	Av. dly. runs Jan.	Av. dly. runs Dec.
Anderson-Prichard Ref. Corp., Cyril	7,500	6,500	6,500
Barnsdall Ref. Corp., Barnsdall	5,000	(*)	4,000
Bell Oil & Gas Co., Grandfield	5,000	3,500	3,000
Black Gold Ref. Co., Oklahoma City	2,500	(*)	(*)
Champlin Ref. Co., Enid	16,000	15,000	15,000
Cities Service Oil Co., Okmulgee	4,000	(*)	(*)
Cities Service Oil Co., Ponca City	12,000	8,500	8,300
Continental Oil Co., Ponca City	28,000	18,500	16,600
Cosco Oil Co., Wynnewood	2,500	(*)	(*)
Cushing Ref. & Gasoline Co., Blackwell	1,700	(*)	(*)
Cushing Ref. & Gasoline Co., Cushing	4,200	4,000	4,000
Deep Rock Oil Corp., Cushing	10,000	9,000	9,000
Eason Oil Co., Enid	3,000	(*)	(*)
Globe Oil & Ref. Co., Blackwell	8,000	(*)	(*)
Johnson Oil Ref. Co., Cleveland	6,000	5,000	5,000
Knox Ref. Co., Covington	300	100	100
Mid-Continent Pet. Corp., West Tulsa	35,000	20,000	20,000
Ohio Oil Co., Bristow	5,000	2,500	2,500
Omar Ref. Co., Garber	5,000	2,500	2,500
Phillips Pet. Co., Okmulgee	6,500	5,350	5,325
Peppers Gasoline Co., Oklahoma City	500	400	400
Pure Oil Co., Muskogee	9,000	(*)	(*)
Rock Island Ref. Co., Beckett	6,500	4,700	5,000
Sinclair Ref. Co., Sand Springs	6,000	4,000	4,000
Sun Oil Co., Yale	5,000	2,000	2,000
Sunray Oil Co., Allen	7,000	4,300	3,600
Texas Co., West Tulsa	16,000	10,000	10,000
Tide Water Oil Co., Drumright	12,000	11,000	11,000
Wilcox Oil & Gas Co., Bristow	6,000	3,300	3,300
Total	235,700	139,650	141,125

*Shut down.

KANSAS

Company and location—	Daily capacity	Av. dly. runs Jan.	Av. dly. runs Dec.
Barnsdall Ref. Co., Wichita	5,000	5,000	5,000
Bay Pet. Co., McPherson	4,000	3,750	3,700
Chanute Ref. Co., Chanute	1,000	800	1,000
Chase Ref. Co., Chase	800	(*)	(*)
Derby Oil Co., Wichita	8,000	5,500	5,600
El Dorado Ref. Co., Eldorado	5,000	3,500	3,500
Falcon Ref. Co., Inc., Great Bend	1,000	450	450
Globe Oil & Ref. Co., McPherson	13,000	11,000	11,000
Kanotex Ref. Co., Arkansas City	12,000	5,500	6,000
National Ref. Co., Coffeyville	8,000	5,000	5,000
Pet. Products Co., Chanute	1,250	1,000	1,000
Phillips Pet. Co., Kansas City	23,000	16,450	16,450
Roper Pet. Co., Parsons	750	450	450
Shallow Water Ref. Co., Scott City	2,500	1,100	1,100
Sinclair Ref. Co., Coffeyville	12,000	8,000	8,000
Sinclair Ref. Co., Argentine	11,000	8,000	8,000
Skelly Oil Co., Eldorado	23,000	20,000	20,000
Socony-Vacuum Oil Co., Inc., Augusta	20,000	16,500	16,500
Standard Oil Co. (Indiana), Neodesha	7,500	7,400	7,400
United Ref. Co., Russell	1,200	800	800
Vickers Pet. Co., Potwin	4,000	3,000	3,000
Total	164,640	123,200	123,950

*Shut down.

EAST TEXAS

Company and location—	Daily capacity	Av. dly. runs Jan.	Av. dly. runs Dec.
Beacon Oil & Ref. Co., Henderson	4,500	(*)	(*)
Cascade Ref. Co., Reed Switch	2,000	(*)	(*)
Clay Ref. Co., Arp	3,500	2,000	2,000
Danciger Refs., Inc., Longview	6,000	(*)	(*)
East Texas Ref. Co., Longview	6,000	(*)	(*)
Hurricane Pet. Corp., Overton	5,000	2,875	2,875
Hurricane Pet. Corp., Arp	3,300	1,900	1,900
Lacy Ref. Co., Kilgore	3,000	2,200	1,800
Magnolia Pet. Co., Corsicana	5,000	4,600	4,600
Tyler Oil & Ref. Co., Tyler	10,000	4,000	3,000
Paluxy Asphalt Co., Talco	5,000	3,000	3,000
Premier Oil Ref. of Texas, Greggtown	4,000	3,000	2,750
Sinclair Ref. Co., Camp Switch	4,000	1,000	1,500
Solvex Refs., Inc., Gladewater	4,500	(*)	(*)
Southport Pet. Co., Kilgore	4,000	3,000	3,000
Talco Asphalt & Ref. Co., Mt. Pleasant	7,500	5,000	4,000
Texas Co., Dallas	16,000	8,500	8,500
Texas Oil Products Co., Gladewater	3,000	1,250	1,000
Tower Ref. Co., Overton	3,500	(*)	(*)
Utah Ref. Co., Kilgore	2,000	1,000	1,000
Total	105,300	43,325	40,925

*Shut down.

WEST TEXAS AND PANHANDLE

Company and location—	Daily capacity	Av. dly. runs Jan.	Av. dly. runs Dec.
Aero Gas & Ref. Co., Fort Stockton	350	100	100
Coltex Ref. Co., Colorado	12,500	8,000	8,000
Concho Ref. Co., San Angelo	250	(*)	(*)
Cosden Oil Co., Big Spring	12,500	10,500	10,000
Danciger Refs., Inc., Pampa	6,500	4,600	4,800

Company and location—	Daily capacity	Av. dly. runs Jan.	Av. dly. runs Dec.
Danube Oil Corp., Borger	1,200	800	800
Farmers Ref., Lubbock	500	200	200
Gulf Oil Corp., Sweetwater	7,000	5,500	6,800
Howard County Ref. Co., Big Spring	2,000	700	750
Moutray Oil Co., Hawley	1,400	600	1,000
Onyx Ref. Corp., Hawley	3,000	1,600	1,800
Panhandle Ref. Co., Kings Mill	2,500	1,250	1,200
Payward Ref. Co., Shamrock	600	600	600
Phillips Pet. Co., Borger	35,000	24,000	24,190
Post Refining Co., Rotan	800	500	500
Shamrock Oil & Gas Corp., Sunray	3,000	2,000	2,000
Stamford Ref. Co., Stamford	450	400	400
Shamrock Oil & Gas Corp., Lefors	1,600	1,200	1,200
Standard Oil Co. of Texas, El Paso	14,000	7,400	7,400
Star Light Ref. Co., Ballinger	1,000	150	150
Texas Co., El Paso	2,000	1,300	1,300
Texas Co., Amarillo	6,000	3,000	3,000
Western Ref. Co., Fort Stockton	1,000	700	700
Wickett Pet. Co., Wickett	3,500	2,500	2,500
Total	122,050	74,900	79,390

*Shut down.

ARKANSAS

Company and location—	Daily capacity	Av. dly. runs Jan.	Av. dly. runs Dec.
Berry Asphalt Co., Waterloo	2,000	700	800
Henry H. Cross, Smackover	6,000	3,000	3,000
Lion Oil Ref. Co., El Dorado	17,000	13,000	13,000
Macmillan Pet. Corp., Norphlet	2,500	2,200	2,000
Root Ref. Co., El Dorado	10,000	6,130	5,900
Stephens Ref. Co., Stephens	700	500	500
Total	38,200	25,530	25,200

NORTH LOUISIANA

Company and location—	Daily capacity	Av. dly. runs Jan.	Av. dly. runs Dec.
Arkansas Fuel Oil Co., Bossier City	25,000	20,000	20,000
Atlas Pipe Line Co., Shreveport	12,500	9,000	9,000
Bayou State Oil Corp., Hosston	750	400	500
East Texas Ref. Co., Sandra	7,000	1,000	1,000
Lake-Price Refineries, Inc.	800	500	500
Premier Oil Ref. Co. of Texas, Cotton Valley	3,000	2,800	2,750
Rodessa Oil & Ref. Corp., Cedar Grove	12,000	10,000	10,000
Stanolind Oil & Ref. Co., Superior	5,000	2,000	2,000
Total	62,250	45,700	45,750

NORTH CENTRAL TEXAS

Company and location—	Daily capacity	Av. dly. runs Jan.	Av. dly. runs Dec.
Bryson Pipe Line & Ref. Co., Bryson	2,000	1,200	1,200
Baird Ref. Co., Baird	1,500	1,200	1,200
Coleman Ref. Co., Coleman	1,000	450	500
Continental Oil Co., Wichita Falls	6,000	4,350	4,100
Denver Prod. & Ref. Co., Gainesville	3,000	800	800
Exchange Pet. Corp., Albany	800	(*)	(*)
Falls Ref. Co., Wichita Falls	2,500	500	500
Gratex Ref. & Fuel Oil Co., Graham	300	270	285
Gulf Oil Corp., Fort Worth	8,000	5,600	5,500
Hightower Oil & Ref. Corp., Brownwood	750	200	200
Jacksboro Ref. Co., Jacksboro	400	175	175
La Salle Pet. Co., Burkburnett	3,000	1,000	1,000
Mankins Ref. Co., Mankins	1,500	1,000	
Magnolia Pet. Co., Fort Worth	7,500	6,000	6,000
North Texas Ref. Co., Gainesville	600	300	300
Ohio Oil Co., Fort Worth	5,000	3,900	3,900
Olney Oil & Ref. Co., North Olney	3,500	1,000	1,000
Panhandle Ref. Co., Wichita Falls	4,200	2,200	2,500
Panhandle Ref. Co., Luederes	1,500	850	900
Southland Ref. Co., Olney	500	100	100
Taylor Ref. Co., Taylor	1,000	750	750
Texas Pacific Coal & Oil Co., Caddo	800	600	600
Tucker Oil Co., Burkburnett	250	155	180
Tydal Ref. Co., Gainesville	1,850	(*)	(*)
Waggoner Ref. Co., Vernon	4,000	4,000	(*)
Total	63,800	35,600	31,690

*Shut down.

SOUTHWEST TEXAS

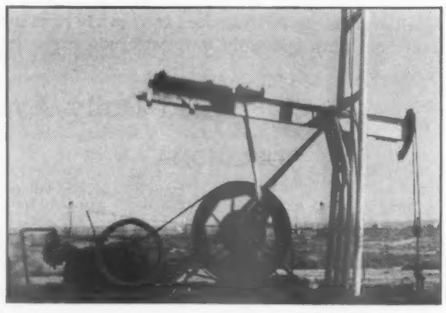
Company and location—	Daily capacity	Av. dly. runs Jan.	Av. dly. runs Dec.
Border Oil & Ref. Co., Sullivan City	1,000	200	200
Carle Ref. Co., Inc., San Antonio	1,000	(*)	(*)
Eggleston Oil Producers Co., Three Rivers	1,000	1,000	1,000
Humble Oil & Ref. Co., San Antonio	5,000	3,500	3,500
Ina Oil & Ref. Co., Hondo	400	(*)	(*)
Magnolia Pet. Co., Luling	8,000	4,000	4,000
Majestic Ref. Co., Dale	500	400	400
Misko Refineries, Inc., Mirando City	4,500	(*)	(*)
Pettus Oil & Ref. Co., Pettus	1,000	900	900
Phoenix Ref. Co., San Antonio	1,200	700	700
Phoenix Ref. Co., Pettus	900	500	500
Pioneer Oil & Ref. Co., Somerset	2,000	1,200	1,200
Rado Ref. & Prod. Co., McAllen	800	500	500
Texas Co., San Antonio	5,000	2,600	2,600
Total	32,300	15,500	15,500

*Shut down.

Home-made Pumping Unit

The ingenuity of some oil operators knows no bounds. Many of them were trained in a rough school which forced them to be their own designers and machinists. They were frequently forced to take the material at hand and utilize it for a certain task.

The custom still survives as the photograph above will testify. This Texas Panhandle operator



had a well that needed pumping and instead of buying a modern unit he constructed this pumping machine from what he had available.

Steam was available on the lease so he reclaimed an old single-barrel steam drilling engine and equipped it with a chain sprocket to drive an old band-wheel which already had a sprocket on it. For a samson post he redesigned the mast, with which the well was equipped for pulling rods and tubing, and thus combined the two. Mast, engine and band-wheel were set on mud sills and securely guyed.

The operator did not have an old walking beam handy so he purchased a new steel I-beam with a mule-head. An old-fashioned stirrup bearing was used to attach the pitman to the walking beam while a modern roller bearing was used on the crank.

QUESTIONS ON TECHNOLOGY

By Charles K. Francis, Ph. D., Technical Editor

Ichthyol a Manufactured Product Not a Petroleum Oil

We have an oil well which produces a heavy black oil which smells pretty bad. We are told it is ichthyol, which is sold at a high price for medical use. Any information you can give us on this will be of great assistance.—A. D. H.

Some years ago there were numerous reports of the discovery of ichthyol in wells drilled for oil. In every instance the oil was of little commercial value but the fact that it was heavy, either deep black or brown in color, and had an unpleasant odor suggested ichthyol. Many questions relating to ichthyol have been answered by The Oil and Gas Journal. The U. S. Bureau of Mines has issued a circular on the subject. This question may be answered by quoting from the introduction:

"The term 'ichthyol' is a name applied loosely to certain preparations used in pharmacy. These preparations do not occur as such in nature but are manufactured by various chemical processes. Ichthyol is the name trade-marked for a product manufactured by the Ichthyol-Gesellschaft, Hamburg, Germany, and marketed in this country by Merck & Co., Inc. Although used in the literature rather loosely, the correctly applied word refers to the product obtained by sulfonating and then neutralizing with ammonia a distillate from the oil retorted from a certain high-sulfur bituminous shale found near Seefeld in the Austrian Tyrol. Due to the fact that fossils of fish and marine animals occur in the limestone associated with the bituminous shale, these deposits have long been known as the 'ichthyolite schists of Seefeld.' The Greek word *'ichthys'* for fish and the Latin word *'oleum'* for oil are the words from which the term is derived."

The crude, tarry shale oil, whose distillate is the raw material for the sulfonation process, has been referred to since the Middle Ages as "Dursten" or "Tirschen" oil, and the term "ichthyol oil" has been used occasionally in the literature to designate the retorted crude oil. The first application of the name "ichthyol" to a particular product is credited to Schroter. Various names for products manufactured by sulfonating bituminous distillates have been coined, and in some of these names the root from the word *ichthys* has been retained. Some of these names can be found in New and Nonofficial Remedies of the American Medical Association under the heading, Sulphoichthyolate Preparations and Substitutes.

Their general term "ichthammol" is used in the National Formulary of 1936 to designate all preparations "obtained by the destructive distillation of certain bituminous schists, sulfonating the distillate, and neutralizing the product with ammonia." The same authority also defines as synonyms the terms "Bitumen sulfonatum, N.F. V." and "Ammonium ichthosulphonate." These names refer only to the manufactured products in general as they are sold in commerce.

At times there has been a good deal of publicity concerning ichthyol due to its rather unusual name and also because there was a shortage of the trade-marked material in this country during the World War. This publicity and the lack of reliable information about the product have given rise to the idea that a crude oil, tar, or shale that is peculiar in any way or contains an unusually large amount of sulfur must contain ichthyol or similar products and therefore is very valuable. This idea is erroneous. To correct this misconception and to provide answers for the many inquiries that the Bureau of Mines received on this subject, all the information readily available concerning ichthyol has been collected and is presented here briefly. This report has been prepared and published by the Bureau of Mines in cooperation with the State of Oklahoma at the Petroleum Experiment Station at Bartlesville, Okla.

Properties and Occurrence of Helium

Kindly give me information about helium gas. Does it come from the well as a liquid with a strong odor? —A. N.

Helium is one of the rare gases with no odor, which neither burns nor supports combustion. It is valued for filling airships because of its weight, only 0.1381 compared with air, and the fact that the hazard of explosion and fires is eliminated. It is tasteless and odorless. No compounds of helium are known, although it is found in several minerals. Small quantities are present in the atmosphere, one to two parts in a million. The important source of helium is natural gas where it occurs from a trace to around 16 per cent. The natural gas now producing helium contains approximately 2 per cent.

PROPERTIES OF HELIUM

Specific gravity:	
Air = 1	0.1381
Hydrogen = 1	1.9800
Atomic weight	4.0020
Critical temp., °C.	—267.94
Crit. press. atm.	2.26
Boiling point, °C.	—268.91
Freezing point, °C.	—271.9
Sp. heat, cal./g.	1.26
Density, lbs./cu. ft. 0° C.-760 mm.	0.0115

Helium is extracted from natural gas by the application of very low temperature under pressure. Helium being the most difficult gas to liquefy, the other associated elements are withdrawn in liquid form, leaving the residue essentially helium. The cost for producing helium is about $7 per 1,000 cu. ft.

Reference: R. R. Bottoms, Occurrence and Production of Helium in the United States. Science of Petroleum, Vol. 2, 1517.

CHEMICALS FOR THE PETROLEUM INDUSTRY

Isopropyl Ether

Use—Dewaxing agent with isopropanol. Increasing octane value of gasoline. Solvent for oils, fats, waxes and resins.

Form—Colorless liquid with ethereal odor.

Formula—$(CH_3)_2CHOCH.(CH_3)_2$.

Molecular weight—102.

Specific gravity—0.7258.

Boiling point, °F.—153.

LIMITATIONS

Color	Water white
Specific gravity	0.723 to 0.728
Water	None (anhydrous $CuSO_4$ test)

Note. Isopropyl ether has an octane rating of 98.

Cut-Back Asphalts Prepared for Road Building and Other Purposes

What are cut-back asphalts? How are they made and what is the chief use made of them?—D. S.

Cut back asphalts are solutions of asphaltic materials, such as heavy residues from the distillation of suitable oils, or asphalts in a petroleum distillate. Unrefined distillates, such as gas oil, kerosene, and raw distillate of the naphtha range are the diluting liquids. These mixtures are liquid at normal temperatures but become solid when exposed in thin films, due to the evaporation of the solvent. The preparations vary over a wide range in consistency and other properties, with the result that numerous grades are marketed, the most important distinguishing property being furol viscosity which may vary from very low, similar to that of water, to quite high, requiring some heating before application.

The cut-back asphalts are extensively applied in road construction as primers, seal coats, carpet coats, mixes on the job and prepared or plant mixes. The fluidity and the fact that evaporation is slow makes the cut-back asphalts suitable for direct application to the mineral aggregate and permits longer time for working the bed and surface. Additional uses include paints, water-proofing, roofing and the preservation of wood.

The Federal Specifications recognize nine grades of which two may serve as examples. MC 5 is a medium curing type, RC 4 is rapid curing.

SPECIFICATIONS FOR CUT-BACK ASPHALTS

Designation:	MC-5 Min.	MC-5 Max.	RC-4 Min.	RC-4 Max.
Flash, °F.	150	...	80	...
Vis. furol at 180° F., sec.	170	280	700	1400
			(At 140°F.)	
Dist. vol. per cent to 680° F.	...	20	...	25
Penetration of residue, 100 g. 5 sec. 77° F.	100	300	60	120
Ductility of residue 77° F. cms.	60	...	...	...
Sol. of resid. in CS_2 per cent	99.5	...	...	...

MC-5 is used for the construction of bituminous wearing courses with aggregates of maximum size not over 1 inch, having little or no material passing the No. 200 sieve by the plant-mixed method.

RC-4 is for construction of wearing courses with an aggregate having a maximum size not over 1.5 inches having little or no material passing the three-quarter inch screen, by the cold-laid plant-mixed method.

Additional types are described, together with testing methods, in the reference.

Reference: Federal Specification SS-A-671, Cut-Back Asphalt for Road Work. Superintendent of Documents, Washington, D. C., 5 cents.

Questions on Petroleum Technology may be sent to Dr. Charles K. Francis, The Oil and Gas Journal, Tulsa, Okla. When a copy of the answer is desired, postage should be included.

PROBLEMS FROM READERS

Edited by L. G. E. Bignell

Velocity of Mud Stream in Drilling

Please furnish me with a formula which may be used to reasonably determine the velocity of upward or return flow of rotary drilling fluids.—G. W. M.

In John R. Suman's "Petroleum Production Methods" this formula is given:

$$N = \frac{D\,(R^2 - r^2)}{x^2\,y\,z\,E}$$

N = number of minutes for fluid to make round trip.
D = depth of hole in inches.
R = radius of drilled hole.
r = radius of outside of drill stem.
x = radius of pump cylinder (inches).
y = stroke of pump (inches).
z = impulses per minute (total); (2 times number of strokes on both sides).
E = pump efficiency (90 to 98 per cent).

In this formula the round trip will be estimated but it cannot be assumed that equal time is taken for the travel of the fluid down the drill stem and up the annular space outside of the drill stem. The cubic contents of these two spaces is quite different. One quick way to make this calculation is to square the inside diameter of the hole in the drill stem and then multiply by 1.07 and the result will be approximate barrels contained in 1,000 feet of hole. If the displacement of the slush pump is expressed in barrels it will be possible to estimate the time required to displace the mud in the drill stem by dividing the content of the drill stem by the displacement of the pump per minute which will give time. Dividing the length of the drill stem by the time will give feet per minute velocity of the fluid stream.

If the Suman formula for round trip is used the up current velocity can be calculated by deducting the speed (in time) of the stream in the drill stem from the total time and this will give the time required to move the mud from the bottom to the top of the hole. Or the volumetric space outside of the drill stem and inside the hole can be calculated and the displacement of the pump per minute can be used to calculate time if both estimates are made in barrels. Velocity can be obtained by dividing depth of hole by time.

It is well to check these calculations from time to time by actual tests at the well. Some type test fluid or material can be used. Gasoline can be used and the mud tested with a gas detector to determine the time, expressed as strokes of the pump, that it took the gasoline to travel to the bottom and up to the top of the well. Suman used some common yellow shelled corn and found it traveled in a mass and was all discharged at practically the same time at the top of the casing. About a pint of corn fed in at the suction side of the pump is sufficient for a test.

It has been observed that calculations of time if properly made will be checked very closely by actual tests and the variation in size of hole due to caving does not seem to effect the speed of the upstream. It seems quite probable the mud stream on the outside of the drill stem moves in an area that is approximately the same as the annular space in the full size hole. The mud in the enlarged portion of the hole is not moved by the stream flowing through it. After the cavity has been filled with mud the velocity in the normal size hole above and below the cavity is the same and it is therefore simply a matter of displacement in the cavity itself.

If the pump is equipped with a stroke counting and recording device it is not difficult to estimate displacement in time and convert the volume to barrels. The volume in the interior of the drill pipe and in the annular space can also be expressed in barrels which will simplify all calculations.

Drip System for Small Gas Well

We have an isolated gas well, capped and sealed, which shows 525,000 cu. ft. per day, rock pressure 1,240 pounds. This is wet gas and will produce about 3 gallons of gasoline per 1,000 cu. ft. of gas. Is there any inexpensive way of converting this gas into gasoline? What steps must be taken and what investment made to do this?—M. H.

There is no commercial equipment which could be installed cheaply enough to permit you to make any profit out of the small gas well. The gasoline content you state can be recovered from this gas seems unusually high. It does not seem economically sound to attempt to install a commercial plant.

However, there is a possibility you might be able to extract some gasoline by running the gas through a pressure vessel packed with a material which would expose a lot of surface to the moving gas. The pressure would be reduced in the vessel from well-head pressure to as near atmospheric pressure as possible. If the vessel is cooled the change in pressure and temperature of the gas will tend to precipitate some of the gasoline. This would not be very efficient but such a plant or outfit could be rigged up for a small sum of money and some gasoline extracted. It would be in effect drip gasoline and might be suitable for motor fuel or it might have to be treated further to give it market value.

If the formation pressure is 1,240 pounds the gas has been compressed about 83 atmospheres. Therefore if a 2-inch pipe leads from the well to the pressure vessel it would be necessary to have a vessel not less than 18½-inch diameter inside to permit the gas to expand back to atmospheric pressure. The pressure vessel might be made by using a piece of high-pressure pipe with sealed ends and provide drips at the underside and so mount the vessel that the liquid would drain to the low end of the vessel.

This is just a suggestion and it might not work when all of the facts are known. However, it is passed along for what it is worth.

To Change Alkalinity of Drilling Mud

When drilling mud is found to be too akaline, what are the most practical substances to add?—H. W. B.

If drilling mud is found to be too alkaline it is usual practice to add sufficient tannate acid in the commercial form of "quebraco" or gallic acid sold as "meptol." These two acids will change the pH value of the mud but there are other acids which might be used. The amount of the quebraco or meptol to be used will be determined by ascertaining the original pH value of the mud and by laboratory check finding out how much of the acid will be required per measured unit of mud. It may be mixed in the pits by "jetting."

Completion of Junked Hole With Cable Tools

We have an old Edwards lime well in which there is an electrode and a release spear which have been driven to the bottom of the hole in an attempt to recover them. In fishing it is easy to catch the spear but it is so tightly wedged that pulling and jerking does not remove it. Can you suggest a means of completing this well without rigging up rotary or the use of expensive machinery or special service? We have a portable winch with spudding attachments and necessary cable tools available. We will be satisfied to pierce the casing and drill the 6 feet of productive lime if it can be done with our own tools and without much expense. Your suggestions and ideas for the possible completion of this well will be appreciated.—D. E. B.

It does not seem practical to further fish to remove the lost objects. The following procedure is therefore suggested:

Fill the hole with cement to a distance of about 6 feet above the top of the spear. Secure a cable tool whipstock with wedge on bottom to be run in on bottom of cable tools before the cement has made final set.

The whipstock should be 3⅞-inch O.D. made of forged steel—about 14 feet long and made especially for cable tools. The angle formed between the side of the hole and the beveled face of the whipstock should be about 3 degrees.

To run the whipstock a special 3⅞-inch diameter cable tool bit dressed like a ripper and provided with a special lug is used. The lug on the bottom of the bit is riveted to the upper part of the whipstock. The balance of the string will consist of a long stroke set of jars immediately above bit, with a 24-foot stem above and then the usual rope socket.

When the lug on bit has been riveted to the upper part of the whipstock the whole cable tool string is lowered into the hole and the bit driven downward by a spudding action. Be careful not to pick up on the bit after the whipstock has been set in place. As the bit is driven downward the cutting edge, formed like a ripper, will cut a window in the side of the casing. When this window is finished the string can be pulled out and a regular bit substituted along with regular jars, but they should be placed just above the bit so if anything else happens the tools can be jarred out of the hole.

Drill a regular hole outside of the window to the required depth and the Georgetown formation can then be acidized into production. There will be little open hole outside of the pierced liner.

Do not attempt to sidetrack the hole with any type whipstock not made of forged steel. If the whipstock is not hard enough to properly deflect the specially dressed bit a junked hole may result. The bit should be dressed like a ripper but on an arc to conform to the diameter of the inside of the liner. With this type bit a good window will be cut and the balance of the job should not be difficult. Be careful in running in and out with bailer not to get hung up on the edge of the window or in the whipstock.

The special forged whipstock is not costly. The ripper-bit can be dressed by some local blacksmith. If long stroke jars are available no other special equipment is necessary. The time needed to do the job can be estimated by your driller.

FIELD OPERATIONS

Summarizing the Week's Developments

KANSAS—The third well in the Derby gas pool gauged 26,100,000 feet daily to rate as the largest gasser ever completed in Sedgwick County. Arbuckle lime production was uncovered near Howard, Elk County. A wildcat between the Albert and Heizer pools in Barton County was showing oil in Arbuckle lime. A McPherson County wildcat was showing as a producer from chat. The Gurney pool, Russell County, was extended one-fourth mile northwestward, and extension of the South Kramer pool in Butler County one-fourth mile to the southwest appeared imminent.

OKLAHOMA—Locations for deep wildcat tests were announced in Section 30-4n-9w, in Comanche County and south of the Cement field, and in Section 35-20-25w, near Arnett in Ellis County. The Cement city council has restricted townsite drilling to one well to the block, with $10,000 bond required, and work has started at first townsite test. The second producer in the Hillsdale pool, Garfield County, had increased production in late tests.

NEW MEXICO—A wildcat 2 miles north of the recent gas discovery in the Lovington area, Lea County, apparently has opened an oil pool. A diagonal offset to the gas discovery also gave promise of uncovering oil production. The Monument field was extended slightly westward. Four producers were completed in the Vacuum field.

TEXAS—The Sun field in Starr County was extended a mile, and the Kelsey field was extended further into Brooks County about 1,900 feet. In the La Rosa field in Refugio County the 6,000-foot pay was found 4,000 feet from the nearest production in that horizon. The new Dunes pool in Crane County has been stretched a quarter of a mile northwesterly. A new King sand pool in Shackelford County and a Caddo lime pool in Young County were opened. Pool discoveries were made in Baylor, Montague and Archer counties. The Montague well started at 607 bbls. per day. The League City field in Galveston County was defined on the east by a dry hole.

LA-ARK-TEX—An important discovery in coastal Louisiana was made on the Eola prospect in Avoyelles Parish in the Wilcox formation of Tertiary age. The sand shows 12 feet of saturation on an electrical survey. East Hackberry deep sand production was extended a half mile east. A 1,264-bbl. well was completed in the Lafitte field in Jefferson Parish. In North Louisiana, the Shreveport field was extended 1 mile south.

ILLINOIS—A second Devonian lime oil well was close to completion in the Sandoval area in Marion County. Max Pray, the owner, was building storage in expectation of a good sized producer, and announces plans to drill 18 other wells to the same formation.

CALIFORNIA—In the Rio Bravo field two wells with a combined initial production of 9,950 bbls. were completed. In West Montebello a newly discovered "finger" of the 6,000-foot sand was found very productive.

Completions in All Fields

(Week Ending January 14, 1939)

	Oil	Gas	Dry	Total	1939 total comp. to date	1938 total comp. to date
N. Y., Pa., and W. Va.	44	8	4	56	186	288
Ohio	1	10	4	15	51	55
Indiana	3	3	4	10	10	6
Kentucky	2	1	11	14	32	30
Illinois	52	1	5	58	224	34
Michigan	13	0	13	26	53	34
Kansas	10	0	5	15	46	113
Oklahoma	10	2	8	20	74	95
Texas:						
North Central Texas	20	0	7	27	86	72
West Texas	30	0	1	31	89	136
Texas Panhandle	3	1	0	4	19	54
East Texas	13	0	0	13	42	139
East Central Texas	3	0	5	8	18	28
East Texas Border	0	0	0	0	2	11
Gulf Coast Texas	18	1	0	19	58	73
Southwest Texas	24	3	1	28	90	96
Total Texas	111	5	14	130	404	609
North Louisiana	1	1	5	7	24	40
Gulf Coast Louisiana	12	0	3	15	36	28
Total Louisiana	13	1	8	22	60	68
Arkansas	3	0	2	5	16	16
Montana	3	1	0	4	7	4
Wyoming	1	0	2	3	4	15
Colorado	0	0	1	1	1	0
New Mexico	9	0	2	11	35	36
Utah	0	0	0	0	0	0
California	18	1	2	21	43	67
Total United States	293	33	85	411	1,256	1,467
Total previous week	311	53	85	449		
Week ending Jan. 15, 1938	365	35	85	485		

Outstanding Fields--Highlights

(Week Ending January 14, 1939)

FIELD—	Rigs up	Wells drlg.	Weekly oil completions	Initial prod.	Total No. oil wells	Daily av. prod.
TEXAS						
K.M.A.	25	31	4	3,656	900	21,300
Wasson-Bennett	7	31	2	3,528	194	10,938
Ector County	12	57	7	6,746	1,411	42,647
Winkler County	4	13	4	3,012	1,741	36,350
Howard-Glasscock	4	15	3	3,506	1,036	15,496
East Texas	20	45	13	725	25,892	372,000
OKLAHOMA						
St. Louis	6	33	2	380	748	23,875
Oklahoma City	0	7	1	84	1,086	95,600
KANSAS						
Barton County	4	17	1	429	398	11,358
Stafford County	8	20	1	386	226	4,950
Rice County	2	14	2	1,376	1,264	28,626
Russell County	5	25	4	1,549	1,182	22,627
NEW MEXICO						
Lea County	5	65	9	2,089	2,001	91,270
LA-ARK-TEX						
Rodessa, La-Ark-Tex	2	11	0	0	1,056	64,866
Cotton Valley, La. (deep)	1	13	1	625	110	10,835
Schuler, Ark.	3	13	2	535	136	17,880
Jennings, La.	1	8	3	480	128	25,487
MICHIGAN						
Freeman-Redding	6	22	5	6,400	66	9,762
ILLINOIS						
Central Illinois	56	390	52	15,077	2,237	133,622
CALIFORNIA						
Wilmington	3	6	3	1,298	593	80,600
KENTUCKY						
Birk City	2	13	0	0	112	4,863

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Illinois and Kentucky

By STAFF CORRESPONDENT

Completed Wells Fall Behind New Operations in the Basin

MATTOON, Ill., Jan. 16.—Fifty-eight completions and 87 new operations in the past week show the trend of the field development in the beginning of the third year of basin operations.

Fifty-two of the wells were oil wells with an actual initial production of 15,077 bbls. There were five dry holes and one gas well.

Twenty of the new oil wells were completed in Fayette County, with 3,875 bbls. initial production. Twenty-six oil wells were completed in Marion County, with 10,508 bbls. initial output; two wells in Clinton County produced 80 bbls. and one in Jefferson County, 226 bbls. There were no dry holes in Fayette, Marion, Clinton or Jefferson. A big gas well was finished in Lawrence County. One oil well with an initial of 60 bbls., and three dry holes, comprised the Wayne County record of the week, and two oil wells, with 319 bbls. in first day output, and one dry hole, was the record of Clay County. A dry hole was completed in Schuyler County.

Max Pray's Niagara (Devonian) lime test in the Centralia district in Marion County was at a total depth of 3,075 feet at last report. The status of the well was subjected to conflicting reports. One report said a Schlumberger survey had shown saturation in the lime and no water. The other side of the story was that nothing had shown. The test is No. 1 Langenfeld, NW SW NW Section 4-2n-1e.

Max Pray is building four 500-bbl. tanks near his well and expects to move in two 3,000-bbl. tanks which indicated his confidence that the well would make a good producer. It was to be drilled in early this week.

The Texas Co. has obtained permission from the Centralia City Commission to construct two more earthen dams across "necks" of Lake Centralia in order to drill wells. The Texas Co. has a lease on the lake, which is the source of the city's water supply. When the area to be drilled is shut off by the dams the water will be pumped off and piles and scaffolding will be provided so that the derrick floors will be above the high-water level. At present the lake is at a low stage and there is little water in the inlets.

The well that Mattoon is most interested in, Wheless and others No. 1 Michael in SW SW NW Section 1-11n-7e, in Coles County, is having water trouble and the drillers are of the opinion that last week's shot of nitroglycerin may have been responsible for it. The well is showing some oil from Weiler sand, total plugged back depth 1,919 feet. It had been drilled to 2,173 feet. At last report the crew was cleaning out the hole.

Completed Wells

Following were the completions of the past week, the initial production representing 24 hours unless otherwise noted:

Fayette County

In Fayette County, Carter Oil Co. No. 5 Larrimore, SE NE SW Section 11-8n-3e, Bethel sand at 1,542-60 feet, shot with 30 quarts, pumped 82 bbls. Carter No. 1 Mary Smith, NE NW NW Section 23-8n-3e, Bethel at 1,573-75 feet, Weiler at 1,467-1,507 feet, shot in Weiler sand with 60 quarts, flowed 465 bbls. through 2-inch choke. Carter Oil Co. No. 1 C. C. Bennett, NE SW NW Section 29-8n-3e, Weiler at 1,518-52 feet, Bethel at 1,592-95 feet, but dry. Flowed 104 bbls. in 4 hours, estimated at 500 bbls. per day. Carter No. 3 Robert Fair, NW SW SW Section 29-8n-3e, Bethel at 1,562-68 feet, shot with 15 quarts. Casing perforated opposite Weiler sand at 1,493-98 feet and 1,501-17 feet, swabbing 120 bbls. per day from both sands. Carter No. 4 Fair, NW cor. SW SW Section 19-8n-3e, Weiler at 1,456-81 feet, and Bethel at 1,523-31 feet, perforated pipe opposite Weiler sand, and shot Bethel sand with 15 quarts, swabbed 192 bbls. from both sands. Carter No. 3 Fred L. Brown, NE NE NE Section 31-8n-3e, Weiler at 1,500-48 feet; shot sand at 1,534-44 feet with 30 quarts, swabbed 68 bbls. in 24 hours. Carter No. 1 Martha Terrey, SE NE SW Section 32-8n-3e, Weiler at 1,453-87 feet, stray sand at 1,503-33 feet, Bethel at 1,543-72 feet, flowed 190 bbls. in 6 hours, estimated at 544 bbls. per day. Sherman and others No. 3 Sefton, a 150 bbl. well heretofore reported, is in NE cor. SE SE Section 1-7n-2e, corrected location. Carter No. 1 M. McClain, NW SW NW Section 4-7n-3e, shot with 10 quarts in Bethel sand at 1,568-73 feet, swabbed 249 bbls. Carter No. 1 A. McClain, Bethel at 1,568-77 feet, shot with 15 quarts, swabbed 348 bbls. through casing. Magnolia Petroleum Co. No. 19 T. C. Clow, SW NE NW Section 5-7n-3e, Bethel at 1,503-34 feet, shot with 40 quarts, flowed 343 bbls. in 7 hours through casing. Kingwood Oil Co. No. 11 Yolton, drilled to 1,938 feet and plugged back to 1,532 feet pumped 102 bbls. from Weiler sand at 1,480-1,532 feet. McClosky lime at 1,732-1,818 feet was barren. W. C. McBride, Inc. No. 5 Logue, SE cor. NE SW NW Section 8-7n-3e, Bethel at 1,505-28 feet, shot with 60 quarts, swabbed 300 bbls. (estimated). Sigel and others No. 2 Owens, Benoist sand at 1,505-29 feet, swabbed 60 bbls. in 1½ hours, estimated at 350 bbls. per day. Union Products Co. No. 3 Arnold, SE NW SW Section 8-7n-3e, Benoist at 1,552-74 feet, pumped 150 bbls. Stewart No. 2 Griffith, NE SW SW Section 29-7n-3e, Weiler sand at 1,588-68 feet, shot with 40 quarts, pumped 175 bbls. Carter Oil No. 2 M. J. Griffith, SE NE NE Section 31-7n-3e, Weiler at 1,531-91 feet, shot with 60 quarts, swabbed 432 bbls. Glasco & Lewis No. 1 Wagner, NW NW NE Section 30-6n-3e, Weiler at 1,620-29 feet, pumped 20 bbls. in 12 hours, later pumped 15 bbls. per day. Texas Co. No. 1 Wagner, SW NW NE Section 30-6n-3e, Weiler at 1,622-32 feet, pumped 50 bbls. W. C. McBride, Inc. No. 4 Logue, NW SE NW Section 8-7n-3e, Bethel at 1,504-29 feet, shot with 80 quarts, swabbed 75 bbls. in 3 hours, estimated at 500 bbls. per day.

In Clay County, F. J. Searight, No. 1 Wilson, SW SW NW Section 6-5n-5e, a wildcat, was temporarily abandoned at 2,490 feet, McClosky lime showed fair saturation but a high water content.

In Lawrence County, Kentucky Natural Gas Co. and Parriott No. 2 Hayes, CNL SE NE Section 13-4n-11w, of second principal meridian had gas sands at 768-78 feet and 796-800 feet, and Buchanan sand at 1,059-64 feet. It is a gas well good for 30,400,000 feet, the largest well yet brought in in the field discovered last year, which, by the way, is the most important gas discovery of the year in any state.

In Clay County, Kingwood Oil Co. No. 2 Elliott, C S half SE NE Section 13-3n-6e, McClosky pays at 2,975 to 2,985 feet, pumped 91 bbls. in 22 hours. Pure Oil Co. No. 1 Hosselton, C W half SE NW Section 21-2n-8e, dry and abandoned at 3,166 feet.

In Clinton County, Adams Oil & Gas Co. No. 1 Carson, SW SW NW Section 36-2n-1w, Benoist at 1,358-74 feet, shot with 5 quarts, pumped 34 bbls. of oil and 33 bbls. of water. Adams Oil & Gas Co. No. 3 Copple, NE NW SE Section 35-2n-1w, Cypress sand at 1,199-1,223 feet, pumped 46 bbls.

Marion County

In Marion County, Texas Co. No. 2 E. Hays, SE NW NW Section 32-2n-2e, Benoist at 1,658 feet, total depth 1,713 feet, flowed 107 bbls. in 3 hours, estimated 750 bbl. well. Texas Co. No. 3 W. Richardson, NE NE SW Section 32-2n-2e, Benoist at 1,686-1,736 feet, flowed 100 bbls. Texas No. 6 Easley, NW SW NE Section 33-2n-2e, Benoist at 1,825-80 feet, flowed 100 bbls. in 12 hours through 1-inch choke. Texas No. 2 Shereshoveck, NE SW NW Section 33-2n-2e, Benoist at 1,771-1,815 feet, flowed 56 bbls. through one-half inch choke. Magnolia Petroleum Co. No. 21 W. O. Chitwood, in NE NE SW Section 16-2n-2e, McClosky lime at 2,011-81 feet, flowed 244 bbls. in 4 hours. Texas Co. No. 9 E. Gett, SE SE SW Section 16-2n-2e, Benoist at 1,821-49 feet, pumped 150 bbls. Kingwood Oil Co. and Bell No. 1 J. O. Shanafelt, C S half SE NW Section 16-2n-2e, McClosky lime at 2,020-90 feet, flowed 891 bbls. Kingwood & Bell No. 9 Shanafelt A, C N half NE NE Section 20-2n-2e, McClosky pays at intervals from 1,962 to 2,025 feet, perforated casing at 1,954-2,202 feet, with 129 shots, flowed 1,369 bbls. in 10 hours, estimated at more than a 2,700-bbl. well. Shell Petroleum Corp. No. 4 Young heirs, SW NE SE Section 20-2n-2e, shot with 15 quarts at 1,770-80 feet, Bethel sand, flowed 685 bbls. in 16 hours, estimated at 978 bbls. a day. Texas Co. No. 1 N. Shanafelt, SW SW NE Section 21-2n-2e, Benoist sand at 1,854-70 feet, flowed 12 bbls. in 15 hours through 1-inch choke and then "died." Magnolia Petroleum Co. No. 2 W. O. Chitwood, SW cor. NE SW Section 28-2n-2e, Benoist at 1,775-1,816 feet, shot with 40 quarts, flowed 240 bbls. Texas Co. No. 3 K. Wayman, NW SW NE Section 31-2n-2e, Benoist at 1,675-1,705 feet, flowed 150 bbls. Texas No. 3 Maxwell, SW NE NE Section 32-2n-2e, Benoist at 1,740-97 feet, flowed 58 bbls. in 3 hours, estimated at 400 bbls. per day.

Kingwood Oil Co. and Bell No. 10 Shanafelt A, C S half NE NE Section 20-2n-2e, McClosky at 1,955-2,031 feet, perforated casing at 1,965-2,011 feet with 92 shots, flowed 2,034 bbls. in 16½ hours, estimated at 3,050 bbls. per day, one of the largest wells yet completed in the basin. Texas Co. No. 5 Small, SW cor. NE NE NE Section 5-1n-2e, McClosky lime at 1,990-2,010 feet, flowed 77 bbls. Texas Co. No. 14 Kalkbrenner, NW cor. SE SE SW Section 5-1n-2e, Mc-

Illinois Fields

HIGHLIGHTS OF THE WEEK: Unusually large wells were included among the Marion County completions, but they were permitted to flow only a short time on their first day's tests. The citizenry of Mattoon, Coles County, are much interested in a good oil showing in their county. Max Pray has a test in the Sandoval area in Marion County bottomed in Niagara lime and it was being closely watched. Production in the basin fields hit a new high in the past week, but the old fields in southeastern Illinois were sharply curtailed in line with the Ohio Oil Co.'s recently announced policy.

The production of new pools, 133,622 bbls.; old fields, 6,172 bbls.; total 139,794 bbls.

Completed oil wells, 52; operations including locations, rigs and wells drilling, 485.

Closky lime at 1,970-74 feet and 1,976-82 feet, flowed 150 bbls. in 3 hours, estimated at 1,015 bbls. per day. Texas Co. No. 11 Kalkbrenner, SE cor. NE SE SW Section 5-1n-2e, McClesky lime at 1,970-85 feet, flowed 250 bbls. Roberts Bros. No. 4 Pittenger, NW cor. SE NE NE Section 5-1n-2e, McClosky lime at 1,985-2-015 feet, flowed 400 bbls. in 21 hours. Hollingsworth No. 4 Kalkbrenner, NW cor. NE SE SW Section 5-1n-2e, McClosky at 1,970-85 feet, flowed 1,650 bbls. in 24 hours, but later dropped to 600 bbls. per day. Texas No. 6 H. Small, NE cor. NW NE NE Section 5-1n-2e, McClosky lime at 1,990-2,008 feet, flowed 77 bbls. Texas No. 7 Small, NE cor. NW NE NE Section 5-1n-2e, McClosky lime at 1,987-2,005 feet, flowed 250 bbls. Texas No. 4 Johnson, NW NE SE Section 6-1n-2e, Benoist 6-1n-2e, Benoist at 1,725-44 feet, flowed 35 bbls. in 3 hours, estimated at 245 bbls. per day. Ohio Oil Co. No. 6 R. E. Murray, SE SW NW SE Section 7-1n-2e, Fredonia pay at 1,992 to 2,051 feet, at intervals, flowed 178 bbls. in 12 hours. Tatum No. 6 English, C S half NW SW Section 8-1n-2e, McClosky pay at 2,013-34 feet, acidized with 3,000 gallons, pumped and flowed 450 bbls. Rockhill No. 11 Foster C N half SW SW Section 8-1n-2e, pays in streaks from 2,900 to 3,084 feet, pumped 680 bbls. Texas No. 3 Frederick B, NW cor. SW NW Section 9-1n-2e, Benoist at 1,826-54 feet, flowed 115 bbls.

In Jefferson County, Carter Oil Co. No. 1 A. Crane, NE SW NE Section 9-1s-2e, Benoist at 1,932-57 feet, shot with 15 quarts, pumped 226 bbls.

In Wayne County, Pure Oil Co. No. 1 W. Lawrence A, W SE SE Section 28-2s-7e, Ste. Genevieve lime at 3,224 feet, pay at 3,318-22 feet, pumped 69 bbls. of oil and the same quantity of water. F. B. Stocker, No. 1 Blackburn, SE SW NE Section 8-2s-8e, dry and abandoned at 3,357 feet, Fredonia top at 3,287 feet. H. H. Weinert No. 1 Ferguson, C W half NE SW Section 3-2s-7e, dry and abandoned at 3,270 feet.

In Jefferson County Kingwood Oil Co. No. 1 Wayer, SW SE NW Section 9-2s-2e, dry and abandoned at 2,494 feet, with Fredonia topped at 2,370 feet.

In Schuyler County, Harry Simcox No. 1 Charles Thompson, SW SW SW Section 25-1n-2w of fourth principal meridian, dry and abandoned at 1,100 feet.

In Clay County, Pure Oil Co. No. 2 Mary Campbell, C E half SE SE Section 9-2n-8e, pays from 3,003 to 3,066 feet, acidized with 5,000 gallons, pumped 159 bbls.

New Wildcat Operations

In Cumberland County, Doran and others No. 1 Haskett, 2,640 feet from north and 330 feet from west lines, Section 15-10n-7e, location.

Jasper County National Consumers No. 1 Arthur Leaman, NW cor. SW SW Section 4-8n-14w, plts.

In Clay County, Kingwood Oil Co. and Gulf Oil Corp. No. 1 Davis, NW SE SE Section 26-5n-5e, location.

In St. Clair County, O'Meara and others No. 1 Tarlton, SW cor. NW NW SW Section 27-1n-10w, Trenton lime top at 492 feet, pay at 492-96 feet, set 5-⅛-inch casing at 496 feet.

Jefferson County, Doctor More and others No. 1 Novak, SW NE SW Section 28-2s-1e, old total depth 2,264 feet, cleaning out to retest Roseclaire and McClosky formations.

In Monroe County, Michael and others No. 1 Faust, C NE NE Section 32-3s-10w, spudded. Collins and others No. 1 Hempe, 695 feet from north and 465 feet from east lines of NE SE Section 36-3s-10w, Trenton lime at 780 feet, total depth 830 feet, hole full of water, abandoned.

In Washington County, J. L. Henderson, Jr., No. 1 Kornegger, NE NE NW Section 8-3s-1w, drilling at 300 feet.

In Perry County, H. B. Warren, Jr., No. 1 Winkler Estate, SW SW SW Section 19-4s-3w, spudded and shut down.

Wildcat Progress

In Wayne County, Doctor More No. 1 More, SE NE NW Section 16-3s-5e, was drilling at 2,950 feet. New Penn Development Corp. No. 1 Wagner, NW SW NE Section 30-2s-9e, drilling at 3,110 feet.

In Wabash County, Renwar Oil Co. No. 1 Holm, SE SE NW Section 15-3s-14w of second principal meridian, drilling at 950 feet. Iroquois Oil & Gas Co. No. 1 Wingenberger, NE SW SE Section 7-3s-9e, moving in rotary.

In St. Clair County, Badger Oil Co. No. 1 Reichert, NE cor. NW NE Section 3-1s-10w of third principal meridian, drilling below 700 feet.

In Effingham County, H. Gussman No. 1 W. Wagner, NE NE SE Section 13-7n-5e, total depth 2,690 feet, shut down for orders. There was little porosity in McClosky topped at 2,479-2,536 feet. Benoist sand was topped at 2,282 feet.

In Montgomery County, W. O. Allen No. 1 Ward, NW NW NE Section 23-12n-5w, shut down at 390 feet to recement surface pipe.

In Cumberland County, D. J. Marshall No. 1 Baker, NE NE SW Section 7-9n-7e, drilling at 1,650 feet.

In Hamilton County, Helmerich & Payne No. 1 Hamilton County Land Bank, SE SE SE Section 6-4s-7e, was at a total depth of 2,815 feet with drill pipe twisted off.

In Randolph County, Chlorins and others No. 1 Anderson, NW NE NW Section 12-4s-6w, was drilling at 1,310 feet.

In Gallatin County, Coates and others No. 1 Green, SW SW SW Section 16-9s-9e, was shut down at 130 feet to make repairs.

In Wayne County, F. R. Stocker No. 1 Blackburn, SE SW NE Section 8-2s-8e, was dry and abandoned at 3,357 feet. Fredonia lime was topped at 3,287 feet.

In Macon County, Decatur Oil & Gas Co. No. 1 Cook, NE NW SE Section 21-15n-2e, was moving in rotary tools.

In Coles County, Kingwood Oil Co. No. 1 Tivnen, SW NE SE Section 30-13n-8e, drilling at 650 feet.

In Edwards County, Owens & Kinney No. 1 Hansen, NW NW SE Section 20-1n-14w of second principal meridian, drilling at 3,290 feet.

In Shelby County, Independent Refining & Producing Co. No. 1 Hackenburg, SE SW SW Section 20-12n-2e, Benoist at 1,465 feet, Aux Vases at 1,539 feet, shale at 1,552-56 feet, underreaming 6-inch casing.

In Edgar County, A. M. Myers No. 1 Brinkerhoff, C SE SE Section 26-13n-13w of second principal meridian, shut down at 1,700 feet.

In Coles County, Texas Co. No. 1 Tracy, C S half NW SE Section 22-13n-7e, drilling at 1,985 feet. Ste. Genevieve lime top at 1,953 feet. R. F. Wheless No. 1 Michael, SW SW NW Section 1-11n-7e, shot with 80 quarts at 1,873-1,905 feet. Hole full of fluid, 50 per cent oil; source of water not determined.

In Champaign County, Sidney Oil & Gas Co. No. 1 Wendling, SW cor. NE NE SE Section 10-17n-10e, shut down at 610 feet for repairs.

In Bond County, Devonian Oil Co. No. 1 Ambuehl, NE SW NW Section 22-6n-4w, shut down at 1,125 feet. Reisig and Quisenberry No. 1 Wildeman, 600 feet from north and 600 feet from east lines of Section 3-6n-3w, shut down at 1,170 feet for repairs. Joseph Kesl, Jr., No. 1 White, SW SE NW Section 17-5n-4w, spudded. Joseph Kesl and others No. 1 Meyer, NW NE NW Section 13-4n-2w, drilling at 848 feet. Lindsey Brothers and British American Oil Co. No. 1 Butler, NE NE SW Section 31-4n-2w, drilling at 1,260 feet.

In Edgar County, Rabe and Henderson No. 1 Sarah Wait, C NE NE Section 16-12n-13w, drilling at 95 feet.

In Shelby County, Swords & McDougal No. 1 Darst, NW NW NW Section 17-11n-2e, total depth 1,370 feet, fishing for pipe. Frank Frederick and others No. 1 Fluge, C N half NE NW Section 34-10n-5a, total depth 790 feet, to move rotary. Carn and others No. 1 Wabash R.R., C N half N half Section 27-10n-5e, drilling at 1,145 feet. Joe Aylward No. 1 Bickford, NW SW SE Section 7-9n-5e, underreaming 8¼-inch casing to 1,129 feet.

In Washington County, Smith and others No. 1 Marquard, SE NW SW Section 33-1s-5w, set 5½-inch casing at 963 feet and drilled plug, hole filled with water, recemented and redrilled plug with same effect, shut down for orders.

In Clinton County, Harris and others No. 1 Hage, C S half SE SE Section 18-1s-5w, total depth 952 feet, reaming.

In Wayne County, New Penn Development Corp. No. 1 Wagner, NW SW NE Section 30-2s-9e, drilling at 3,110 feet.

In Washington County, Jett and Skidmore No. 1 Hoelscher, SW NE SE Section 25-2s-5w, drilling at 850 feet. American Seismograph Co. No. 1 Leibrock, NW NW NW Section 24-3s-3w, shut down at 1,400 feet.

In Randolph County, Badger Oil Co. No. 1 Schroe-

(Continued on Page 98)

Western Kentucky Had Sparse Results; 2 Small Oil Wells

OWENSBORO, Ky., Jan. 16.—Western Kentucky's record of the week in wells completed was about the worst in 12 months. Ten dry holes and two small oil wells comprised the completion crop. The McClosky lime yielded only failures, one in the Spottsville field in Henderson County and another in the Panther district in Daviess County.

Following is the report of wells completed, new operations and wells in pay horizons:

Butler County, Mount Zion School district: J. F. Breslin and others No. 5 Porter Harper, dry hole, total depth 176 feet. Rochester district: Jess Ashby and others No. 1 Jim Ray, 10-bbl. well in Jett sand, total depth 875 feet.

Christian County, Crofton district: Lew Wentz and others No. 1 Cories Barnett, dry hole at 929 feet.

Daviess County, Birk City district: Correction—Major Oil Co. No. 1 Federal Lank Bank, running pipe, total depth 1,904 feet. Ohio Oil Co. No. 4 Oscar Lively, setting pipe at 1,876 feet; No. 7 Lively, rigging up. W. E. Hupp and others No. 10 Mrs. L. Taylor, total depth 1,891 feet, good core, will drill in this week. Oklahoma district: F. F. Gibson and others No. 1 Thurman Greer, 40 acres, dry hole through Barlow sand. Whitesville district: Ashby & Ellis No. 1 A. R. Iglehart, dry hole through Bethel sand. Panther district: Lincoln Oil Co. No. 2 Lewis Iglehart, dry hole through McClosky lime, total depth 2,006 feet. Shorts district: J. H. Wilson and others No. 1 J. H. Sloane, rigging up.

Grayson County, 2 miles south of Annette: A. M. Ross and others No. 1 Arroy Loyd Tie Co., moving in.

Hancock County, Patesville district: Henry Ross No. 1 T. D. Boling, dry hole, total depth 925 feet.

Henderson County, Spottsville district: Magnolia Petroleum Co. No. 1 J. E. Casey, dry through McClosky lime, drilling at 2,370 feet, going to the Corniferous lime. Magnolia Petroleum Co. No. 2 Annie Green, spudding in. Baskett district: Cooper, Acos & Cooper No. 1 Mrs. Laura B. Lacke and others, location.

Muhlenberg County, 2½ miles southwest of Rochester: H. C. Darby and others No. 1 Horace Smith, dry hole, total depth 1,000 feet.

Ohio County, Resine district: Doug Boling and others No. 1 Ella Crowe, dry hole, total depth 1,100 feet. Fordsville district: George Hobbs and others No. 2 J. D. Forman, 5-bbl. well in Jett sand, total depth 460 feet. W. E. Neal and others No. 2 R. J. Roberts, 85 acres, dry hole through Bethel sand.

EASTERN KENTUCKY

ASHLAND, Ky., Jan. 16.—Reported production of a gas well shot last week, and one dry hole mark eastern Kentucky completions for the week.

Inland Gas Corp. reports 95,000 cu. ft. of gas as the initial production of No. 203 on the Right Fork of Troublesome Creek in Knott County. The well reached a total depth of 3,172 feet.

Price Fralet completed a dry hole in No. 1 Dave Mays, on Duck Fork in the Ida May district of Lee County. In the same district Sherm & Oakes are down 400 feet in No. 1 railroad right of way at Duck Fork. Heath & Co. were drilling at 100 feet in No. 5 S. W. Steele, also on Duck Fork. Bear Track Oil Co. is drilling at 200 feet in No. 1 in the west end of the Hyton tract on Yellow Rock road in the same district.

In the Big Sinking district of Lee County W. C. Wiggins was drilling at 515 feet in No. 2 M. F. Bailey land on Billies Fork.

In the Burning Fork district the Rough River Corp. is down 650 feet in No. 1 H. B. Adams, Sr., with tools still in hole. The operator will try to drill by the tools.

In Martin County Kentucky-West Virginia Gas Co. is down 2,530 feet, in shale, in No. 574 on the John and Benjamin Sellards land on Coldwater Fork. The same firm was drilling at 1,950 feet, in Berea sand, in No. 5249 Alie Ward land, nearby. The same company is cleaning out No. 5219 C. W. Preece land, also on Coldwater Fork.

Texas and Louisiana Gulf

By
NEIL WILLIAMS

An Important Oil Showing in a South Louisiana Test

HOUSTON, Tex., Jan. 16.—An important discovery is believed to be in the making on the Eola prospect, southwestern Avoyelles Parish, coastal Louisiana, where preparations are being made for a production test at Sid Richardson No. 1 Haas Investment Co. The hole is bottomed in the Wilcox formation (Lower Tertiary) at 8,455 feet and 7-inch casing was cemented at this depth preparatory to testing a 105-foot oil column logged at 8,440-8,545 feet. The bottom 10 feet of the hole is reported to have been sand and shale showing oil and gas. This is the third sand section logged, as an electrical survey showed favorable indications in the Cockfield and Sparta formations. The results of the electrical survey were as follows: Cockfield sand at 6,495-6,520 feet, with the top 12 feet showing saturation, showed 16 ohms resistivity on the second curve, 11 ohms on the third curve and 4 to 3⅝ ohms on the fourth curve. Twelve feet of porous sand showing oil and gas was logged in the Sparta between 7,490 and 7,526 feet, and showed 15 ohms on the second curve, 12 on the third curve, with no evidence of water, and 5 to 7 ohms on the fourth curve.

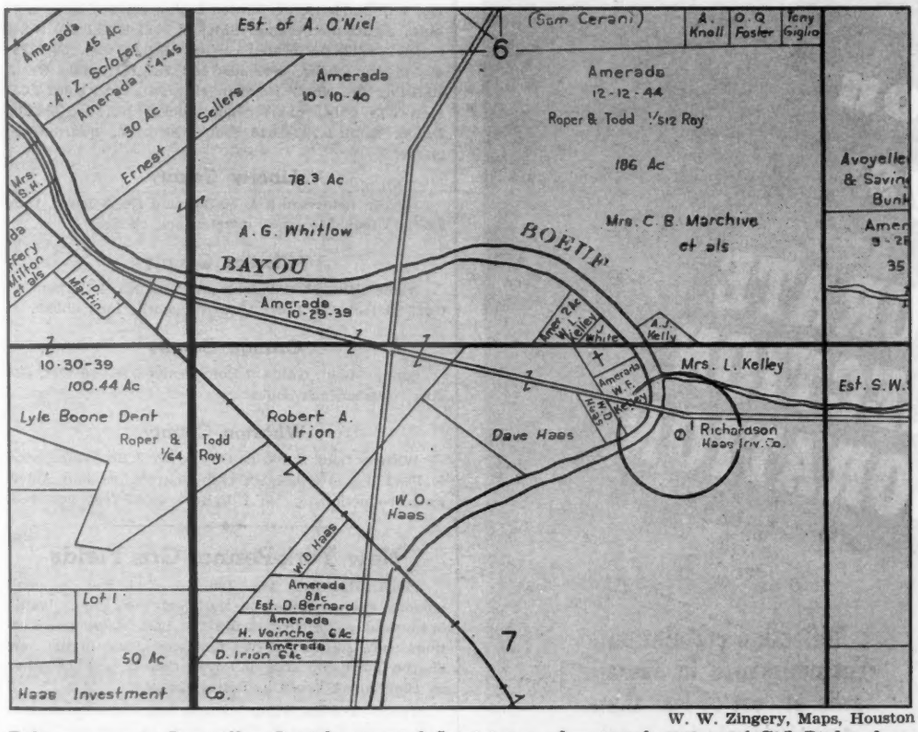
This well has been watched with much interest after the Cockfield formation was topped high. On top of the Vicksburg the well was running normal with Magnolia Petroleum Co. No. 1 Bowden, a dry hole about 6 miles due east. The Cockfield was topped 150 feet high, and on the top of the Sparta and Wilcox, the well is checking 200 feet high. Geological tops on all markers were as follows: Heterostegina 3,621 feet, Vicksburg 5,990 feet, Jackson 6,200 feet, Moody Branch 6,352 feet, Discorbis Yeguanensis 6,340 feet, Eponides 6,469 feet, Cook Mountain 6,984 feet, Sparta 7,376 feet and the Wilcox at 8,430 feet.

This is the first well drilled in the Gulf Coast by Sid Richardson who acquired approximately 8,000 acres from the Haas Investment Co. on a contract that required the drilling of two wells with Haas Investment Co. retaining a quarter interest in all production developed. The acreage adjoins a 10,000-acre block of Amerada Petroleum Corp., leased in 1936 on the strength of reflection seismograph and other geophysical work done in 1934, the same year the Cheneyville structure was found.

The prospective pool opener is in Section 7-28s-3e, about 12 miles northeast of the Villa Platte field, Evangeline Parish, and approximately 6 miles southeast of the Cheneyville field in Rapides Parish. The significant feature of the well is that this will be the first Wilcox production developed in Coastal Louisiana and the sand section is the same as the producing section of the Spurger field in Tyler County, Texas, which was opened in 1937 to establish the first prolific production from the Wilcox formation. For the benefit of distant readers it should be said that this Wilcox sand is not the "Wilcox" of Oklahoma and Kansas. The Louisiana Wilcox is of Tertiary age and the Wilcox of Oklahoma is upper Ordovician. They are far apart on the geologic scale. The completion of the well as a commercial producer will definitely establish a prospective trend of approximately 250 miles extending eastward from the Segno field in Polk County through the northern tier of Coastal Louisiana parishes including Beauregard, Allen, Evangeline, Avoyelles and into western Mississippi.

The deep sand at Bayou Choctaw, West Baton Rouge Parish, received another producer with the completion of Louisiana Crusader Oil Co. No. 4 Schwing which flowed 389 bbls. daily through an 8/64-inch choke. Production was obtained by perforating the casing at 8,254-62 feet.

Approximately 2 miles southwest of the newly opened Golden Meadows field, La Fourche Parish, Martex Petroleum Co. has derrick up for No. 1 Falgout Holding Co., Inc., Section 9-19s-22e. The discovery well, Texas Co. No. 1 Laterre, Section 1, flowed 219 bbls. daily through a three-sixteenths inch choke on a recent 24-hour gauge. The well was recompleted last week through perforated casing at 8,500-20 feet.



W. W. Zingery, Maps, Houston

Eola prospect, Avoyelles Parish, coastal Louisiana, showing location of Sid Richardson No. 1 Haas Investment Co. which is preparing to test the Wilcox (Tertiary) formation

An East Hackberry Extension

The deep sand recently opened at the East Hackberry field, Cameron Parish, was extended about a half mile east as Union Producing Co. completed No. 7 Caldwell for an initial production of 1,040 bbls. daily, flowing through a quarter-inch choke. Sand was topped at 7,193 feet, and cored to a total depth of 7,208 feet. In the same parish and located in Section 4-15s-8w, Superior Oil Co. abandoned No. 1 John Pradia, a deep core test, and staked location in Section 32 for No. 1 Delmer, another deep core test, about a mile northwest of the abandoned hole.

Shell Petroleum Corp. No. 1 Shexnayder, an interesting wildcat in St. James Parish, is drilling in sand below 8,281 feet after a drill-stem test at 7,959-73 feet recovered a faint blow of gas and 67 stands of salt water and mud. Fourteen feet of sand and shale showing oil and gas was logged in this section the previous week.

On the Henderson salt dome, St. Martin Parish, Texas Co. No. 11 St. Martin Land Co., Section 21-8s-7e, pumped an estimated 25 bbls. of oil in seven hours to open the first oil production from the structure. The well is being tested and no accurate gauge will be available for a few weeks. This parish received a new wildcat operation as Magnolia Petroleum Co. staked location for No. 1 Marcelin in Section 8-10s-7e. The location is due south of the Section 28 salt dome, and northeast of the St. Martinsville field.

In Terrebonne Parish, Texas Co. No. 1 Continental Land & Fur Co., Section 29-18s-14e, is bottomed at 11,931 feet and the hole is being reamed. The progress of this test is being watched with much interest as it has attempted to blow out several times below 11,000 feet.

Fohs Oil Co. No. 7 State, Lake Long field, La Fourche Parish, is drilling in sandy shale below 10,232 feet, with sand and sandy shale showing oil and gas logged at 8,806-38 feet. An electrical survey showed 160 ohms resistivity at 9,768-9,804 feet. This is the first showing logged, as the 9,400-foot sand found in the other oil wells was absent.

Good Well in Lafitte

In the Lafitte field, Jefferson Parish, Texas Co. No. 2 Lafitte, Section 19-17s-24e, perforated casing at 9,980-95 feet, and was completed for an initial production of 1,264 bbls. daily through a three-eighths inch choke. This well apparently defines production from the 10,000-foot sand, as salt water was tested at 10,096-10,106 feet. The same company's No. 1 School Board, Section 16-17s-24e, is drilling in shale and lime below 10,885 feet, and the hole is expected to be carried below 12,000 feet as a protection string of 9⅝-inch casing was cemented at 10,622 feet.

Humble Oil & Refining Co. No. 3 Habetz, an outpost in the North Crowley field, Acadia Parish, is bottomed at 8,748 feet and 7-inch casing was cemented at that depth for a production test. Location is in Section 45-8s-1e.

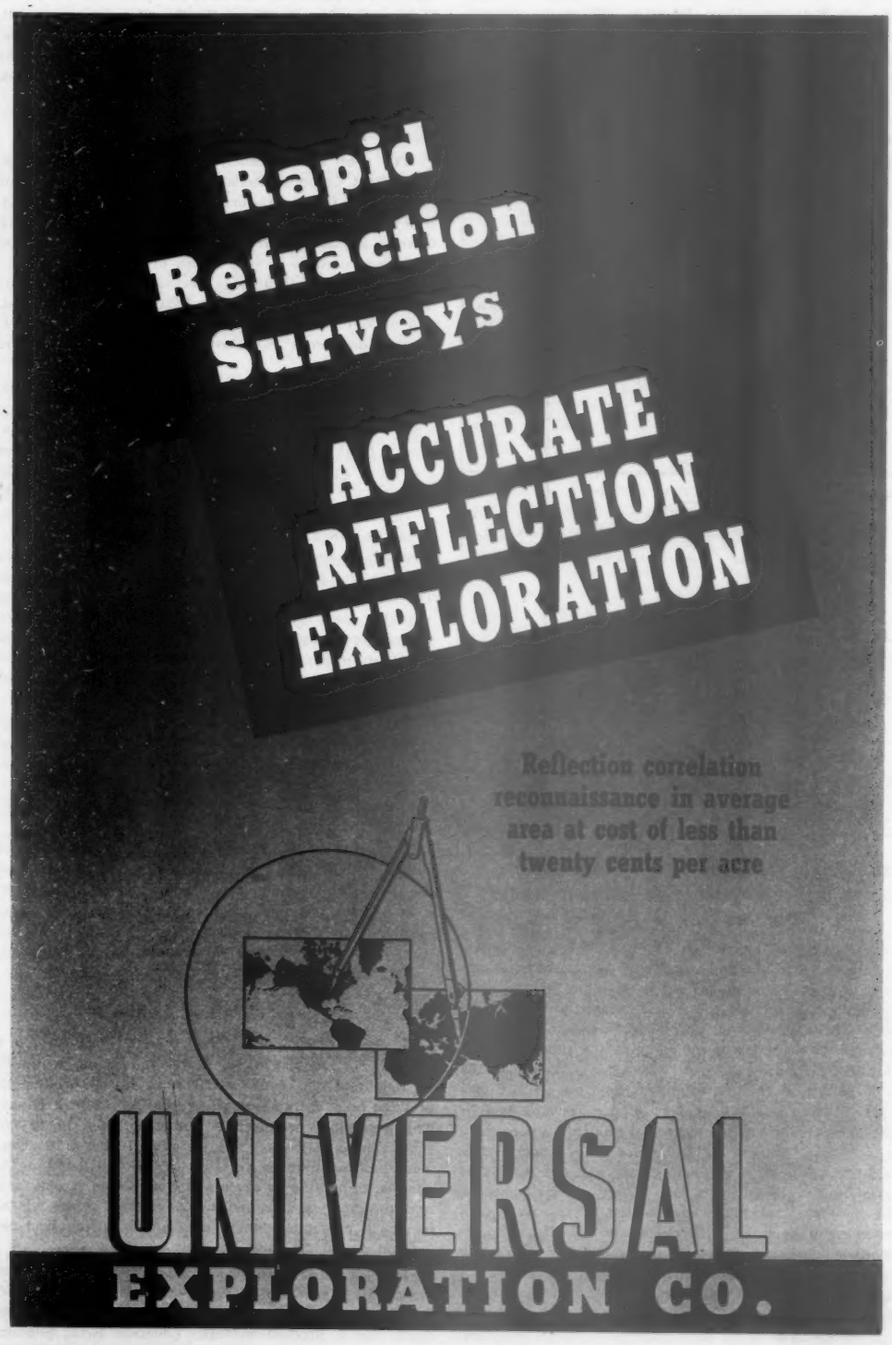
Along the Texas Coast, the newly opened League City field, Galveston County, was defined to the east with

the abandonment of George Echols No. 1 Maco Stewart, a half mile east of the discovery well. The well was quit at a depth of 9,395 feet after salt water sand was cored in the 9,300-foot sand at 9,316-22 feet. No showings were found in the 9,000-foot sand from which the discovery well is producing. While this field is still in the early stages, drilling development has been far from encouraging in view of the erratic sand conditions. Interest in the field is centered on Phillips Petroleum Co. No. 1 Patton, an outpost northeast of the discovery well. It is drilling below 9,400 feet, with 12 feet of hard sand showing oil logged at 9,009-24 feet, and salt water sand cored at 9,055-65 feet.

In the Garwood area, Colorado County, Coyle & Concord No. 4-B Powell, I.&G.N. Survey No. 45 is shut down for repairs at 6,124 feet. A 15-minute drill-stem test at 5,900-29 feet tested 500 pounds of pressure and 150 feet of oil and mud of which 85 per cent was oil. Gravity of the oil is 39 degrees. A second test was made at 6,022-37 feet and tested 500 pounds of working pressure, 30 feet of oily mud and 240 feet of salt water. Casing will probably be cemented, and the well is expected to be completed as a distillate producer. In the same county and located in the D. Corbit Survey, Mills-Bennett Production Co. has derrick up for No. 1 J. M. Truchard, located 2,215 feet from the southeast line and 4,190 feet from the southwest line of the survey.

Stanolind Oil & Gas Co. No. 1 Sowden, an offset to production in the Clear Lake field, Harris County, is bottomed at 5,861 feet and 7-inch casing was cemented at 5,848 feet, preparatory to testing. The Frio sand was topped at 5,710 feet and gas sand was cored at 5,710-24 feet. This is the only showing. The well is expected to make a distillate producer. Location for two more tests were made by Humble Oil & Refining Co. No. 3-C and 4-C Humble-West, north of production in the G. B. McKinstry Survey.

On the Bolivar Peninsular Prospect, Galveston County, Sun Oil Co. is moving in material for No. 2 Cade Estate. The well is located in the A. Dickson Survey, about 3 miles from No. 1 Cade, a dry hole. No. 2 Cade is the fourth test on this prospect.



TEXAS GULF COAST COMPLETIONS IN PROVEN FIELDS

Brazoria County

Lockridge field: Dr. Charles Lusk No. 3 State, perforated casing 6,359-63 feet, 158 bbls., eighth-inch choke. Hastings field: Stanolind Oil & Gas Co. No. 31 Curkett, perforated casing 6,057-78 feet, 577 bbls., quarter-inch choke. West Columbia field: Texas Co. No. 10 Phillips, sand 5,610-53 feet, 426 bbls., quarter-inch choke.

Chambers County

Anahuac field: Gulf Oil Corp. No. 4 Syphrett, perforated casing 7,125-31 feet, 693 bbls., quarter-inch choke. Cedar Point field: Standard Oil Co. of Texas No. 4-118 State, sand 5,943-81 feet, 226 bbls., 5/32-inch choke.

Galveston County

Dickinson field: Humble Oil & Refining Co. No. 5 Townes, sand 8,085-8,115 feet, 369 bbls., quarter-inch choke.

Harris County

Fairbanks field: Amerada-Stanolind Oil & Gas Co. No. 4 Denman, perforated casing 6,831-39 feet, 102 bbls., eighth-inch choke; No. 4 Munger, perforated casing 6,828-38 feet, 139 bbls., eighth-inch choke. Housh & Thompson No. 1 Yerkes, sand 6,814-35 feet, 150 bbls., eighth-inch choke. Amerada-Stanolind Oil & Gas Co. No. 1 C. Marietta, perforated casing 6,832-39½ feet, 75 bbls., eighth-inch choke. Sinclair Prairie Oil Co. No. 2 Goodykoontz, perforated casing 6,832-35 feet, 69 bbls., eighth-inch choke. Friendswood field: Humble Oil & Refining Co. No. 7 Herman Hospital, sand 5,862-6,046 feet, 653 bbls., quarter-inch choke; No. 9 Keisling-Dixon, sand 5,782-6,045 feet, 600 bbls., quarter-inch choke.

Liberty County

Hardin field: Smith & McDannald No. 3 Rives, sand 7,637-45 feet, 540 bbls., quarter-inch choke.

Jefferson County

Nome field: Shell Petroleum Corp. No. 4 Carpentier, 6,023-34 feet, 275 bbls., three-sixteenths inch choke.

Orange County

Orange field: Gulf Oil Corp., sand 5,934-56 feet, 528 bbls., quarter-inch choke.

Wharton County

Withers field: Bankline Oil Co. No. 2 Broussard, sand 5,470-45 feet, 162 bbls., eighth-inch choke. Pan American Production Co. No. 2 Britton, 5,597 feet, gas well.

New York-Penna. Gas Fields

COUDERSPORT, Pa., Jan. 16.—One well, a small gasser, was completed in the New York-Pennsylvania deep sand gas fields during the past week and locations were staked for two new wells, one in the new Sharon Township area of Potter County and the other in Bingham Township, Potter County.

The New York State Natural Gas Co. completed a well on the Bennie E. Truax farm in Harrison Township, Potter County, with an initial open flow of 1,200,000 cu. ft. increased from 1,000,000 cu. ft. by a 20-quart shot. This well reached the Onondaga at 4,747 feet, the Oriskany at 4,781 feet and got the gas pay at 4,787 feet. It was completed at a total depth of 4,793 feet.

G. L. Cabot, Inc., staked the Sharon Township location and is moving in equipment to drill on the Plank School farm. Sylvania Corp. has staked the location for a No. 2 on the Harrison farm in Bingham Township where it recently completed a 9,400,000-foot well.

The test of Updegraff and others on the Fred Whitney lot in Bingham Township reached the Oriskany during the past week and encountered the first gas pay 2 feet in the sand. The well topped the Oriskany at 4,891 feet and at 4,893 feet got the first show gauging 3,750,000 cu. ft. with a rock pressure of 725 pounds. It was reported drilling at 4,894 feet at the end of the week.

Half of the remaining eight operations in Potter County are in Sharon Township where the Allegany Gas Co. is drilling at 820 feet on the Dickerson farm, New Penn Development Corp. is building the rig on the Gorton-Kemp farm and Empire Producing Co. has the rig up on the F. Dickerson farm and Belmont

(Continued on Page 72)

North and East Texas

By
D. H. STORMONT

Discoveries in North Texas Are Feature of Development

WICHITA FALLS, Tex., Jan. 16.—The three new discoveries in North Texas, one each in Baylor County and Archer County, featured development in the district during the past week.

In Montague County, Rogers & Rogers and others No. 1 J. E. A. Burnett, Jacob Lenow Survey, abstract 433, new deep discovery well a mile west of Nocona, was completed for 670 bbls. of oil daily to measure up to early expectations. Production is from the Bend series from 4,639 feet to 4,656 feet, total depth, and no water is showing. Development was started immediately in the area when Stanolind Oil & Gas Co. announced intentions to drill an offset to the discovery. The test will be on the J. M. Zachery 40-acre tract just west of the J. E. Burnett discovery tract.

Louis Sikes No. 1 W. Ford, in the T. Cecil Survey, indicating a new 4,300-foot pool about four miles northeast of the Hull-Silk pool of northern Archer County, drilled the cement from 4,402-27 feet which was to shut off water, and operators were preparing to perforate the casing for production tests of the oil section from 4,375-4,402 feet. A four-well development campaign has been announced by Deep Oil Development Co. on its acreage in the north extension area to the Hull-Silk pool. The company has staked its first test as its No. 1 L. F. Wilson, Lot 1, Block 25, in the same area in which the discovery wells for both the 3,800-foot and the 4,300-foot horizons were drilled.

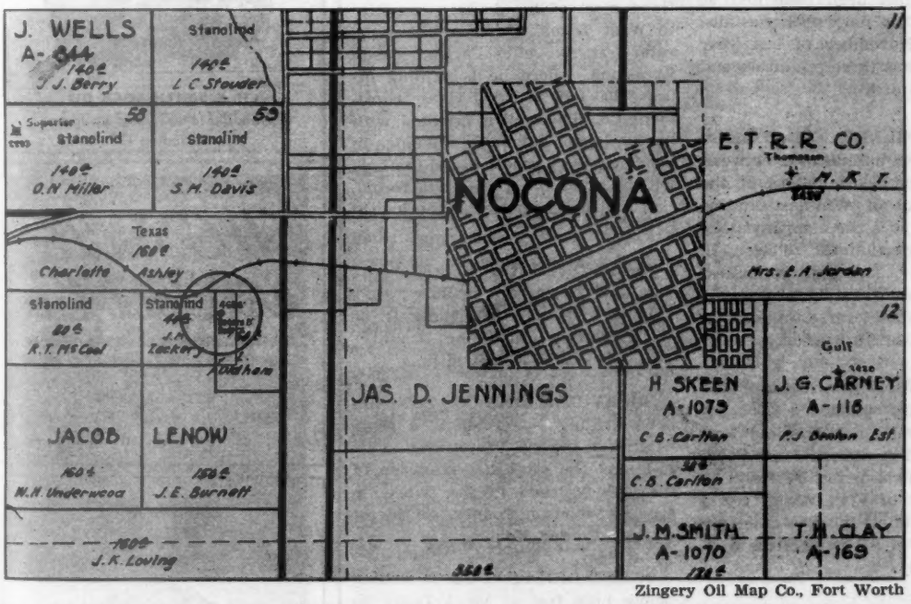
In Baylor County, British American Oil Co. is reported preparing to start two new operations near its No. 1 F. C. Green, Section 215, T. & N. O. Survey, wildcat producer which opened a new upper Canyon oil pool in the county about 9 miles east of Seymour and approximately 10 miles from production. Neither of the locations has been made, but it is understood one of them will be to the same producing horizon as the discovery well and the other to the original 5,000-foot contract of the discovery.

Clay County got a new deep test when L. T. Burns located a 5,500-foot rotary wildcat in about the central part of the county. The wildcat will be his No. 1 A. L. Browning and is in Block 94 of the J. H. Belcher subdivision, about 6 miles southwest of Blue Grove. The test is on a 2,000-acre block and will seek the deep horizon that has been tapped several times throughout the county but never completed.

Shallow oil production in Wise County will be sought by O. K. Giles at a wildcat test spudded on the Luttrell farm, giving the area three tests in the process of drilling. The new test will seek production from the sand at around 600 feet. It is northwest of the town of Poolville, near the Hash community.

A new 3,500-foot test has been staked in Wilbarger County in a shallow area about 10 miles south of Vernon. It is Lawson & Lovell No. 16 W. T. Waggoner, Section 109, Block 14, H. & T. C. Survey.

In Cooke County, Jack Caudle and associates are reported to have spudded in their 5,500-foot wildcat test 4½ miles southeast of Woodbine. It will seek production from the Strawn sand, producing in the Walnut Bend pool opened last summer by Sinclair Prairie Oil Co. in the extreme northern part of the county.



Zingery Oil Map Co., Fort Worth

Rogers & Rogers have completed a wildcat good for 670 bbls. of oil per day to open a new pool just outside of the town of Nocona in Baylor County

EASTERN TEXAS

DALLAS, Tex., Jan. 16.—Houston County and Henderson County held attention in the East Texas area over the past week as production was indicated at the third test in the Opelika area and the Navarro Crossing pool received indications of a new oil producer.

First definite stains of oil were reported for Humble-Tide Water-Seaboard No. 1 S. S. McGee, third test in the deep Opelika area of Henderson County. The wildcat was cored from 8,090 feet to 8,105 feet and recovered hard gray lime with bands of oil-bearing shale. Operators plan to continue coring. This well has run from 250 to 275 feet lower than the discovery well and the second test, which was completed as a gas-distillate producer. The area is producing from the Glen Rose of lower Trinity and the development of commercial oil production at this third test in the area will do much to stimulate deep drilling throughout the area.

Possibly proving 2,500 acres on the southwest side of the Navarro Crossing pool of Houston County, Humble Oil & Refining Co. No. 2 Dailey & Taylor had been completed for 50 bbls. of oil per day. This well is important because it is the first one completed in the field with a low gas-oil ratio and entirely free from water. Location is on a 500-acre tract in the J. G. Thompson Survey and 1,200 feet southwest of a gas well.

Also in Houston County, but in the Grapeland area, John G. Mayo and Cook Drilling Co. have staked location for their fourth wildcat test in the area after abandoning the third at a total depth of 6,100 feet. The new operation is No. 1 C. A. Walling, in the B. Parker Survey, 4 miles north of Grapeland. Production will be sought from the Woodbine sands. The abandoned test is the operators' No. 1 Klob.

New Tests

Five new wildcat tests were staked in the East Texas basin, two being in Grayson County and one each in Navarro, Rusk and Van Zandt counties. F.H.E. Oil Co. located its No. 1 Graham in the Chas. Quillen Survey about 1 mile south of Collinsville in Grayson County and Denver Producing & Refining Co. located its No. 3 Cannon Estate in the E. Barnes Survey No. 43, about 1 mile northwest of Whitesboro, also in Grayson County.

In Navarro County, Guy Sitton staked his No. 1 J. P. Fortson in the T. J. Chambers Survey, 4 miles east of Alma. Rusk County's new operation was Ham & Bagges No. 1 Ash Griffin, J. Randolph Survey, about 4½ miles northwest of Mount Enterprise. Van Zandt County's new test was F. A. Richardson No. 1-A B. C. Dodd, in the T. W. Hutchinson Survey, about 2 miles south of Grand Saline.

EAST CENTRAL TEXAS COMPLETIONS

(24-hour tests.)

Falls County

W. H. Mahon No. 1 V. H. Moore, dry and abandoned at 330 feet.

Franklin County

Humble Oil & Refining Co. No. 65 King, 4,287-4,316 feet, 143 bbls.

Freestone County

Amerada Petroleum Corp. No. 8 H. Berk, 4,011-29 feet, 189 bbls.; No. 9 H. Berk, 4,020-27 feet, 180 bbls.

Grayson County

Denver Producing & Refining Co. No. 2 Cannon, dry and abandoned at 2,512 feet.

Henderson County

Peyton Bros. No. 2 Carter, abandoned location.

Houston County

Cook & Mayo No. 1 J. H. Klob, dry and abandoned at 6,141 feet.

Titus County

Humble Oil & Refining Co. No. 850 Lena Blackburn, junked and abandoned at 850 feet.

Van Zandt County

Richardson No. 1 B. C. Dodd, junked and abandoned at 4,269 feet.

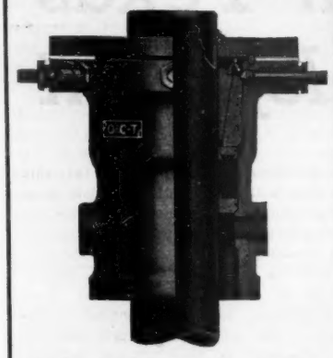
(Continued on Page 97)

O-C-T

TYPE C-9-PS

SLIP SUSPENSION

CASING HEAD



Permits landing casing at any desired point. Permits drilling and running casing through blowout preventer equipment flanged above. Packing, slips, and slip bowl passes through blowout preventer to seat in body of head. Packing compressed by weight of casing. Hold-down screws aid in compressing packing. Available with or without welding flange, which holds casing down and effects auxiliary seal above slips. Test pressures up to 10,000 lbs.

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PISTON PULLER

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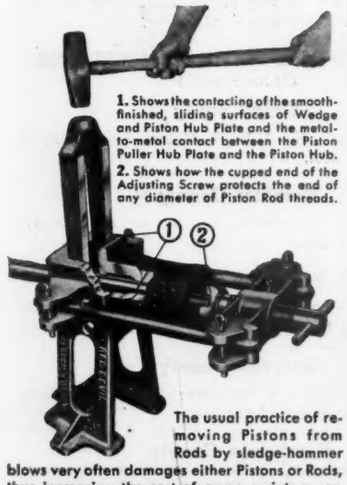

1. Shows the contacting of the smooth-finished, sliding surfaces of Wedge and Piston Hub Plate and the metal-to-metal contact between the Piston Puller Hub Plate and the Piston Hub.
2. Shows how the cupped end of the Adjusting Screw protects the end of any diameter of Piston Rod threads.

The usual practice of removing Pistons from Rods by sledge-hammer blows very often damages either Pistons or Rods, thus increasing the cost of pump maintenance.

The RED DEVIL Piston Puller removes badly stuck Pistons, without injury to either Piston or Rod, EASILY and QUICKLY. A few hammer blows on the top of the Wedge (see illustration) forces the Piston forward and loose from the Rod taper. Write for Bulletin No. 113-B.

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CABLE ADDRESS "OWMCO"

Among the Drilling

S. B. ROBERTS DRILLING CO., of Abilene, Tex., is moving in spudder for the drilling of a Palo Pinto lime test a quarter mile west of production in the Ivy pool of northwestern Shackelford County, West Central Texas. The test will be Owens-Snebold Oil Corp. and others No. 1 McCown, west half of the NE quarter of Section 158, B.B.B.&C. Survey. The well is contracted to the area's 3,200-foot horizon.

BERT FIELDS DRILLING CO., Dallas, Tex., is completing its No. 1 Tyler, east offset to Iron Mountain and Humble No. 1 Taylor, in the new Avoca Townsite pool of Jones County, West Central Texas. Saturation has been drilled from 3,208-11 feet and casing has been cemented at 3,207 feet. This new pool was discovered in November of last year and already has three producers and several tests drilling.

OLSEN DRILLING CO. of Odessa has completed a link well between the north and south halves of the Emperor pool of Winkler County, West Texas. It is the company's No. 2 Cowden, Section 26, Block 5-B, P.S.L. Survey, and was completed for an initial of 484 bbls. per day after being shot with 480 quarts at a total depth of 3,040 feet.

S. C. HERRING, contractor of Abilene, Tex., has spudded a 2,500-foot test a half mile north of old Fort Phantom Hill in eastern Jones County, West Central Texas. Test will be R. B. Farris of Fort Worth No. 1 B. D. Doty, on a 169-acre tract out of the center of 369 acres of the W. T. Evans Survey.

REDDITT & GRAY, Louisiana and eastern Texas drilling contractors, who opened the first production from the deep Trinity series in the Joaquin sector of Shelby County, are preparing to deepen another test in the area. The contractors are arranging to dismantle the rig used on No. 2 Pickering, discovery well for the deep horizon, and move it back to No. 1-A Pickering, Loggins Survey, 5 miles south of Joaquin, for deepening to 5,100 feet. The test was drilled last year to 4,219 feet and plugged back to 2,950 feet for testing upper shows. Plans are to deepen this test before starting activity on an offset to the oil discovery.

TARGETT DRILLING CO., Wichita Falls, Tex., has received contract from Jack Caudle and associates for drilling a wildcat test 4½ miles southeast of Woodbine in Cooke County. The test will seek the Strawn sand pay of the Walnut Bend pool opened by Sinclair Prairie Oil Co. in the extreme northern part of the county. The test is No. 1 E. E. Walker, in the H. Gilman Survey, Abstract 412, on a block of approximately 8,000 acres. It will be drilled with rotary and is projected to 5,500 feet.

PARTEN DRILLING CO. extended the northern limits of the Snyder pool of Howard County, West Texas, one location north with the completion of No. 1 Snyder, Section 28-30-1s, T.&P. Survey, for 200 bbls. of oil in eight hours.

SID RICHARDSON, who has confined most of his drilling activities to West Texas, has moved a large rotary at Avoyelles Parish, coastal Louisiana, where he is drilling below 8,200 feet in No. 1 Haas Investment Co. The well is credited with having logged favorable showings in the Cockfield formation and the hole will be drilled to the Sparta formation which is expected to be logged below 8,500 feet.

OSAGE DRILLING CO., Oklahoma City, and others are drilling No. 1 Tippett, in Section 266, Block G, of W. T. Survey, in Gaines County, Texas, below 5,042 feet in lime.

ROBEY DRILLING CO., Tulsa, has been drilling No. 1 Miers, a semi-wildcat, in the SW NW of Section 21-25-14e, at the southeast extension of the Quincy trend in the Batesville area of Woodson County, southwest of Yates Center, Kans.

COMET DRILLING CO. is drilling below 1,600 feet at No. 1 Tarby, in C NW NE of Section 12-1n-2e, in the Davis area, Murray County, Oklahoma, which was staked almost six months ago.

L. A. FARRIS AND JOHN F. DUWE, Wichita, Kans., and associates have been drilling No. 1 Kimminau, a wildcat in the NE NW SW Section 12-30-9w, east of Zenda in Kingman County, Kansas. They set a cement retainer for a cement squeeze job in the Viola lime at 4,595 feet, total depth. Following the cement squeeze job, the hole was plugged back to the chat, which was topped at 4,270 feet, and the casing was perforated to test showing of gas revealed in a survey. Recently the crew has been bailing water out of the hole in an effort to remove all the rotary drilling mud so that

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a gauge can be taken on a flow of gas from the chat after perforating the casing from 4,275 to 4,295 feet. The casing is scheduled to be perforated again.

NOBLE DRILLING CO., Tulsa, is drilling No. 1 Noble, a wildcat, for Pure Oil Co. in the area northwest of Ardmore, Okla., which is being closely watched. It is now drilling below 4,301 feet. Location is C NE SE Section 35-3s-1e. The test is to be drilled to around 9,000 feet. In the Chickasha gas area of Grady County, Oklahoma, this contractor is waiting for cement to set at Carter Oil Co. and others No. 1 Smith, C SE SW Section 26-5n-8w, after setting 9⅝-inch pipe at 6,618 feet.

HELMERICH & PAYNE, Inc., Tulsa, at No. 7 Kenworthy, SW NW SW Section 14-14-6e, Lincoln County Oklahoma, was drilling below 800 feet.

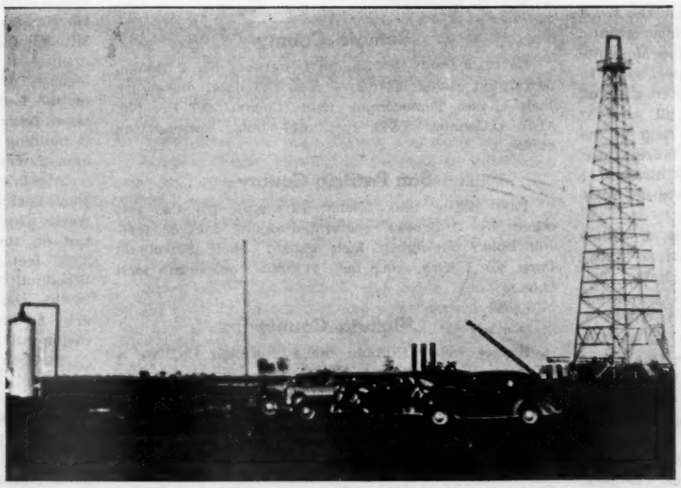
SUMMIT DRILLING CO., Tulsa, in completing Mid-Continent Petroleum Corp. No. 1 Tiger, NE SW SE Section 12-6-5e, Seminole County, Oklahoma, ran tubing and rods and was preparing to install pumping unit.

PARKER DRILLING CO., Tulsa, has been waiting for casing to cement at Gulf Oil Corp. No. 8 Garrett, NW SW Section 27-2s-3w, in the deep Fox pool of Carter County, Oklahoma. Retainer was set at 4,380 feet.

ALLEN & MORRIS received contract from James P. Nash for No. 1 Young & Henderson in Aransas County, Texas, and material is being moved to the location. Two operations are reported in the Luby field, Nueces County, for Seaboard Oil Co. while five rigs are running in the La Rosa field for Geophysical Service, Inc., and Phillips Petroleum Co.

TRINITY DRILLERS, Inc., have apparently extended oil production in the East Premont field, Jim Wells County, Texas, 1 mile south by recompleting Transwestern Oil Co. No. 1 Dunlop. This well was originally completed for a distillate producer at 5,365-70 feet and a drill-stem test through new perforations at 6,185-6,200 feet, showed favorable results. Contract was received from Superior Oil Co. for No. 1 Zaragosa Laurel, a wildcat test in Webb County. In Brooks County, drilling continues on Southern Minerals Corp. No. 1 Proctor, while at the Cordele field, two operations are reported for Lewis Production Co.

OVEN DRILLING CO., Enid, is putting down three wells for Champlin Refining Co. which have an important bearing on future activity in western Oklahoma. The two tests in the new Hillsdale area were both down, awaiting tests. The No. 1 Mackey, NW NW SE Section 4-24n-8w, south offset to the discovery, was awaiting further tests before deepening below total depth of 6,697 feet, and the No. 2 Boehm, NE SE NW Section 4-24n-8w, was preparing to drill plug sometime during the first of the week at total depth of 6,650 feet in the first Wilcox. Champlin's No. 1 Allen, SE cor. Section 26-24n-8w, 5½ miles southeast of Hillsdale, was drilling ahead below 5,400 feet.



Midwest Royalty No. 1 Louis Lobit, discovery well, League City field, Galveston County, Texas

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Southwest Texas District

By
F. L. SINGLETON

Only Extensions Reported in Southwest Texas Fields

CORPUS CHRISTI, Tex., Jan. 16.—For the first time in several weeks there were no discoveries reported in the Southwest Texas district, although several important extensions were marked up in proven fields. In the Sun field, Starr County, production was extended approximately a mile northwest with the completion of Sun Oil Co. No. 1 Montalvo, with an initial production of 78 bbls. per day through a three-sixteenths inch choke, with tubing pressure 175 pounds and casing pressure 600 pounds. Salt water sand was cored in the Vicksburg formation at 4,997-5,017 feet, and the well was completed in the Frio formation through perforated casing at 4,855-68 feet. The same company's No. 3 McKinney, located in the north extension area, flowed 119 bbls. daily through a one-eighth inch choke from perforated casing at 4,660-70 feet.

To the north, in the Kelsey field, Jim Hogg and Brooks counties, Humble Oil & Refining Co. No. 2 McGill Brothers extended production in the latter county approximately 1,900 feet as the well flows into the burning-pits. The hole is bottomed at 4,772 feet, and casing was perforated between 4,690 and 4,738 feet. A 25-minute drill-stem test recovered 300 feet of pipe line oil and 40 pounds of working pressure. A third test at 4,758-72 feet tested salt water. The same company is moving in another rig to drill No. 1 Mestena Oil & Gas Co. in the south half of Section 3 of the Rowler and Rankin subdivision.

Along this same trend and located in the East Premont field, Jim Wells County, Transwestern Oil Co. is reworking No. 1 Dunlop, a recently completed distillate well, to extend production about a mile south. The perforations at 5,365-70 feet were squeezed off, and the casing reperforated at 6,185-6,200 feet. and the well is flowing 65 bbls. of distillate per day through a one-eighth inch choke. It is the opinion of the operators that the squeeze job on the original perforation is leaking, shutting off any fluid that might come from the new perforations. A drill-stem test prior to the production test recovered 2,610 feet of 31-gravity oil and 1,000 feet of brackish water.

Jim Wells County

In the southern part of Jim Wells, Magnolia Petroleum Co. cemented a protection string of 7-inch casing at 6,314 feet in No. 1 Maun, and the hole is being carried deeper. This is one of the most attractive wildcats drilling along the trend, as three sands showing gas have been logged. The well is near the town of LaGloria in the Los Olmos y Loma Blanca grant.

Another extension was indicated for the McCampbell field, Aransas and San Patricio counties, as L. L. Smith No. 1 Cavitt is reported to have cored gas and distillate sands at 5,783-5,800 feet, and oil sand at 5,800-6,015 feet. This is the most active field in the district as 15 rigs are operating, and location for another active test has been made by L. G. Bradstreet for No. 1 Robert McCampbell, a wildcat, 3 miles from production, in the Peter Mahoney Survey.

In the Longhorn field, Duval County, M. M. Miller completed No. 1 fee for an initial production of 196 bbls. through a five-thirty-seconds inch choke. The well is bottomed at 4,911 feet, and is producing through perforated casing at 4,904-07½ feet. The same operator is rigging up a twin, No. 1-A fee, to test the Cole sand at 4,000 feet, which tested pipe line oil in No. 1 fee. Longhorn Drilling Co. spudded No. 2 Miller, Section 28, while Hiawatha Oil & Gas Co. has cemented surface casing in No. 7 Miller, Block 24.

In the La Rosa field, Refugio County, Hewitt and Dougherty No. 2 Birdie Rooke extended the 6,300-foot sand approximately 4,000 feet, as it flowed 149 bbls. daily through one-eighth inch choke from sand at 6,316-21½ feet. Geophysical Service, Inc., No. 6 Rooke, topped sand at 6,328 feet, and was completed at a total depth of 6,353 feet, for an initial production of 174 bbls. daily, flowing through a one-eighth inch choke.

Humble Oil & Refining Co. No. 1 Schley, the discovery well of the Schatel area, Frio County, has been abandoned, as production dropped to less than 2 bbls. of oil and 6 bbls. of salt water per day. In the same area, Humble Oil & Refining Co. No. 2 Houston, an outpost, was abandoned in the Edwards lime after a drill-stem test at 5,130-51 feet, tested 110 feet of sulfur water. The Edwards was topped at 5,141 feet.

In Guadalupe County, A. D. King No. 1-A Rosenbrock, Vicente Duran Survey No. 4, has been completed for an initial production of 107 bbls. of fluid per day, of which 87 per cent is salt water and 13 per cent 16.2 gravity oil. The hole was drilled to the Edwards lime and the well was completed on the pump at a plugged-back depth of 1,797 feet.

SOUTHWEST TEXAS COMPLETIONS IN PROVEN FIELDS

Aransas-San Patricio Counties

McCampbell field: Atlantic Refining Co. No. 1 Frank, 7,226 feet, 224 bbls., three-sixteenths inch choke.

Bee County

Tulsita field: Herbert Aid and others No. 4 Hall, 3,580 feet, abandoned.

Jim Wells County

South Alice field: W. G. Coates No. 3-A Stillwell, perforated casing 5,467-63 feet, 120 bbls., one-eighth inch choke. H. H. Howell No. 1 Molberg, 5,405 feet, 36 bbls. distillate quarter-inch choke. H. H. Howell No. 4 Stillwell, 5,550 feet, 54 bbls., quarter-inch choke. H. J. Mosser No. 1 Schuggart perforated casing 5,330-34 feet, 51 bbls. distillate, 12 hours, three-thirty-seconds inch choke.

Live Oak County

Oakville field: Simmons Oil Co. No. 5-B McGriff, 2,050 feet, 180 bbls. fluid, 20 per cent salt water, seven-thirty-seconds inch choke.

Nueces County

Agua Dulce field: Shelton and others No. 1 Schultz, 5,130 feet, abandoned.

Refugio County

La Rosa field: Hewitt and Dougherty No. 2 Rooke, perforated casing 6,316-21½ feet, 148 bbls., one-eighth inch choke. Tomoconnor field: Copano Oil Co. No. 41-B O'Connor, 5,849 feet, 627 bbls., quarter-inch choke.

San Patricio County

East White Point field: Plymouth Oil Co. and others No. 2 Brooks, perforated casing 5,685-88 feet, 169 bbls., one-eighth inch choke. Shell Petroleum Corp. No. 1 Kirk, 5,668 feet, 111 bbls., one-eighth inch choke.

Victoria County

Heyser field: Humble Oil & Refining Co. No. 8 Vandenberge, 5,487 feet, 3 bbls. per hour, five-thirty-seconds inch choke. McFaddin field: Barnsdall Oil Corp. No. 14 McFaddin, 4,405 feet, 113 bbls., nine-sixty-fourths inch choke.

Laredo District

Fitzsimmons field: Robert Bluntzer No. 1 Fitzsimmons, perforated casing 4,349-53½ feet, 200 bbls., three-sixteenths inch choke. Porter & Rycade Oil Corp. No. 1 Fitzsimmons, perforated casing 4,331-34 feet, 125 bbls., five-thirty-seconds inch choke. Hoffman field: Argo Oil Corp. No. 2 Rodden-fee, perforated casing 2,578-2,604 feet, 193 bbls., jetting with gas. Cox, Hamon, Gorman and others No. 54 Cuellar, sand 2,560-75 feet, 55 bbls., jetting. Cuellar Bros. No. 1 fee, perforated casing 2,760-72 feet, 120 bbls., jetting with gas. Rowan and Hope, Inc., No. 2-B Cuellar Bros., sand 2,543-62 feet, 60 bbls., jetting. Lundell field: Moore and Massingill No. 5 Duval County Ranch Co. sand 1,502-08 feet, 200 bbls., jetting with gas.

McMullen County

Ezzell field: Harry Ezzell No. 26 fee, 1,590 feet, 108 bbls., pumping. Munson field: Ohio Fuel Supply Co. No. 1 Nueces Land & Livestock Co., 1,215 feet, 115 bbls., pumping.

Zapata County

Escobas field: Dulup Oil Co. No. 40 Trevino, 531 feet, 6 bbls., pumping.

San Antonio District

Bexar County

Coffey field: Philtop Oil & Gas Co. No. 4 Cassin, 1,242 feet, 33 bbls., pumping.

Caldwell County

Branyon field: Coffield and Robinson No. 5-C Young, 2,219 feet, 46 bbls., 5 bbls. water, pumping. Dunlap field: Housel Oil Corp. No. 3-B Dunlap, 2,308 feet, 20 bbls., pumping. Luling field: Spokane Oklahoma Gas & Oil Co. No. 5 Hibbitts, 2,079 feet, 25 bbls., pumping. Salt Flat field: Elmag Oil Corp. No. 3 Pope, 2,728½ feet, 29 bbls. oil, 320 bbls. water, pumping.

Kimble County

Junction field: Plateau Oil Co. No. 1 Davis, 1,261 feet, abandoned. Plateau Oil Co. No. 1 Hunger, 2,074 feet, plugged back 1,260 feet, 1,250,000 cu. ft. of gas.

New York-Penna. Gas Fields

(Continued from Page 68)

Quadrangle Drilling Co. has the rig up on the N. Kemp farm. In other Potter County operations, Evjen, Harris and others are drilling at 670 feet on the A. R. Mitchell farm, Sweden Township; G. L. Cabot, Inc., is drilling at 301 feet on the William Cobb farm, Allegany Township; Penn York is drilling at 2,035 feet on the Lena Barnes farm (elevation 2,078 feet), Harrison Township, and New York State Natural Gas Co. is building the rig on the F. McCarthy farm in Bingham Township.

A wildcat in Cameron Township, Steuben County, New York, neared the Oriskany horizon in the past week when the New York State Natural Gas Co.'s test on the F. Boyd farm topped the Onondaga at 3,835 feet and was reported down to 3,841 feet. A Woodhull Township test likewise neared completion in this county. It was the Clancy well on the property of School District No. 5 which has cemented casing run to 3,679 feet, 15 feet in the Onondaga.

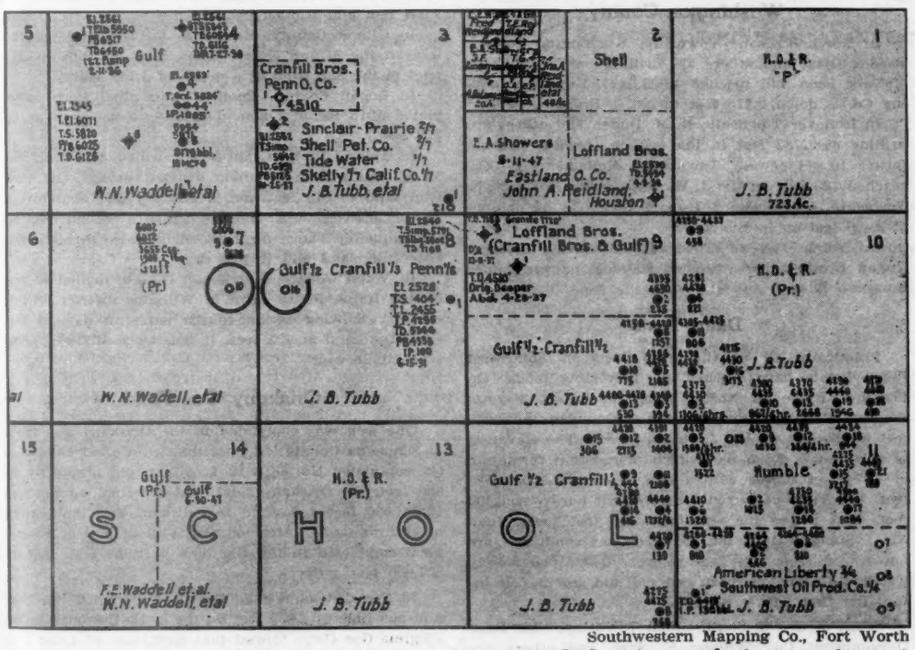
Steuben County, New York, operations outside Woodhull Township are in Addison Township where Van Gelder and others are drilling at 3,101 feet on the Fred Farnham farm after topping the Tully at 3,066 feet; in Greenwood Township where G. L. Cabot, Inc., is drilling at 901 feet on Ray Scribner farm and has a location on the L. Highland farm, and in Troupsburg Township where New Penn Development Co. and others are building the rig on the E. G. Cady farm.

Dunes Pool Extended; Find New Pays in Two Counties

By D. H. STORMONT

FORT WORTH, Tex., Jan. 16.—A small extension to the Dunes pool of Crane County and the staking of an important wildcat in Howard County led the developments in the West Texas district in the past week, while the discovery of new producing areas in Shackelford and Young counties centered the development in the West Central Texas district.

Extending the production in the Dunes pool, eastern Crane County, about a quarter mile to the northwest, Standard Oil Co. of Texas found oil pay at 3,167-85 feet. The well was drilling ahead below 3,203 feet in lime, with 335 feet of oil in the hole. Location is in Section 5, Block 30, University lands.



Southwestern Mapping Co., Fort Worth

Gulf Oil Corp. has staked two south extensions to its Ordovician producing area in western Crane County. The company has six producers in the deep field

Also in Crane County, Gulf Oil Corp. staked a mile northeast outpost to the McKnight pool. It is the company's No. 5 McKnight, Section 1, Block 21-B, P.S.L. Survey.

Production in western Howard County will be sought by T. G. Shaw on a block on which the operator has drilled one dry hole, and has another test drilling at present. The proposed test will be No. 1-D Wilkinson, Section 19, Block 34, T.&P. Survey, about 2 miles north of a dry hole drilled in May of last year and about 6 miles southeast of the Shaw No. 1 Wilkinson, just over the line into Martin County, which is drilling ahead below 3,600 feet. Oil showings have been found in both the dry hole and the drilling test, placing the new location favorably on the structure.

Northern Basin Area

Stanolind Oil & Gas Co. was reported to have added 1,400 acres to its block on the Slaughter ranch in the southern part of Hockley County. The company already had 1,140 acres in the area. This block is between the Slaughter pool in Hockley County and the Duggan pool in southeastern Cochran County.

In Yoakum County, 880 feet west of his No. 1 Willard, J. E. Mabee has reported the top of the anhydrite at 2,310 feet in No. 3 Willard. This places the well considerably higher on structure than No. 1, which extended production in the Bennett pool a mile to the southwest and indicated a linking of that pool and the Wasson pool, about 3 miles southwest.

WEST CENTRAL TEXAS

Opening of a new King sand pool in Shackelford County, and a Caddo lime pool in Young County, highlighted the week's activities in West Central Texas.

Jesse L. Douglas No. 1 W. D. Baker, in Section 210, E. T. Survey, in western Shackelford County, pumped 50 bbls. of oil daily from the King sand at 1,883-98 feet. The well is just northwest of the first oil producer in the King sand horizon, completed 12 years ago by Humble Oil & Refining Co. and Richardson Brothers.

In Young County, Brader & Graves No. 1 S. Clark, in the Charles Newhouse Survey, 4½ miles northwest of Graham, began flowing at the rate of 1,000 bbls. per day after drilling 12 feet of saturation from 3,850-62 feet. The well is expected to be completed without shooting or acidizing the section. This is the sixth new area opened in the vicinity of Graham in the past eight months.

Jones County for another week held a good portion of the activity throughout the west central area. In the new Akard pool, opened last month, Hedrick Oil Co. No. 1 Morrison, west offset to the discovery, filled 2,050 feet with oil in five hours after drilling 2 feet of sand from 2,149-51 feet. The flow was killed and operators plan to drill deeper into the formation before completing the well. In the Avoca Townsite pool two new producers were indicated and another outpost test was staked. Bert Fields and others No. 1 Tyler, east offset to Iron Mountain and Humble No. 1 Taylor, is preparing to drill in after setting casing on 3 feet of saturation topped at 3,208 feet. The well checked high to the pool's three producers and is expected to make the best well in the pool.

North of production 2,100 feet, Ungreen & Frazier No. 1 Hamilton & Cox deepened from 3,264 feet to 3,273 feet and found an increase in oil after swabbing dry at the first depth. Operators are acidizing the test with intentions of completing it from the present depth. On the west side of the pool, Browning No. 1 Avoca school district failed to shut off water in plugging back 4 feet from total depth of 3,305 feet. Operators are preparing to cement a liner on bottom for a completion attempt through perforations. Saturation was topped at 3,287 feet, low compared with the other wells in the field.

Although operators were drilling ahead on the Forest Development Corp. and Carl King Drilling Co. No. 1 T. C. Anderson, scheduled 5,000-foot Ordovician exploratory test 3 miles south of Abilene in Taylor County, commercial production had been indicated in approximately 100 feet of core recovered in the Cook lime section from 1,850 feet to 2,025 feet. There are four small producers in the vicinity of the test which are producing from the Cook lime section. The deep wildcat is in Section 8, L.A.L. Survey and 3¼ miles east of Lake Kirby.

WEST TEXAS COMPLETIONS

(24-hour tests.)

Andrews County

Skelly Oil Co. No. 1 W. T. Ford, 4,255-4,450 feet, 1,501 bbls.

Crane County

Cardinal Oil Co. No. 19 Emma Wooley, 2,125-60 feet, 466 bbls. E. E. Fogelson, No. 8-D University, 3,450-3,715 feet, 265 bbls.

Ector County

Atlantic Refining Co. No. 2-D University, 3,385-3,650 feet, 1,642 bbls. E. E. Fogelson No. 3-B University, 3,300-3,658 feet, 364 bbls. Gulf Oil Corp. No. 147 Goldsmith, 4,123-83 feet, 1,260 bbls.; No. 149 Goldsmith, 4,100-4,219 feet, 1,239 bbls.; No. 158 Goldsmith, 4,145-4,200 feet, 480 bbls. Phillips-Pure No. 4 J. Cowden, 4,109-4,240 feet, 752 bbls. Shell Petroleum Corp. No. 6-A J. E. Witcher, 3,995-4,185 feet, 1,009 bbls.

Howard County

F. W. Merrick No. 4-B Chalk, 2,895-2,946 feet, 1,522 bbls. Murko Oil & Realty Co. No. 4-A Chalk, 2,740-2,897 feet, 1,672 bbls. Parten Drilling Co. No. 1 D. H. Snyder, 2,664-2,895 feet, 312 bbls.

Pecos County

British American Oil Co. No. 10 Payton, 2,048-96 feet, 258 bbls. H. M. Jaffee No. 2 H. Cordz, 2,040-73 feet, 196 bbls. Superior Oil No. 7 Iowa Realty Trust, location temporarily abandoned; No. 3 Sinclair-Prairie, 1,622-50 feet, 12 bbls. Wotola Oil No. 2 Byrne, 1,347-82 feet, 20 bbls.

Presidio County

Sadler Bros. No. 1 Bogly, dry and abandoned at 3,315 feet.

Upton County

Choate-Ulmer-Kidd No. 5 Sanger, 2,430-35 feet, 125 bbls. Humble Oil & Refining Co. No. 28-B Ricker, 2,377-98 feet, 22 bbls.

Ward County

Humble Oil & Refining Co. No. 24 Richter, 2,770-

(Continued on Page 86)

Eastern Field Report

By STAFF CORRESPONDENT

Two Locations for Deep Tests in Jackson County, West Va.

PITTSBURGH, Pa., Jan. 16.—Two locations for deep tests were made in Jackson County, W. Va., which should add much of geologic importance to the region east of the Parkersburg syncline. In Ripley district, on Little Branch of Parchment Creek, Columbian Carbon Co. will drill a test on the G. W. Lahey farm starting at an elevation of 810 feet.

On the Winfield quadrangle, it is .9 mile south 38 degrees 45 minutes latitude and 1.1 miles west of longitude 81 degrees 45 minutes. It is approximately 6 miles south 20 degrees west of Ripley just south of which town a test to the Oriskany had a small showing of gas.

In Ravenswood district, Jackson County, Joe Rubin and others made a location for a second test on the W. J. Brown farm which is located about 3,000 feet east and 2,600 feet north of the Oriskany test on this farm which after shot tested as high as 400,000 feet a day with the Oriskany sand topped at 4,257½ feet or subsea minus 3,671.1 feet. It is not far from a former test which reached the Corniferous lime in December, 1935, on the W. S. Proctor farm, same district, at subsea minus 3,530 feet, considerably higher than the original test on this farm. It was not drilled through to the Oriskany sand.

Seventeen operations were reported from the lower eastern fields during the week of which five were dry holes, eight gas wells, and four producers with a daily initial of 18 bbls.

SOUTHEAST OHIO

The deep test of Columbian Carbon Co. on the George D. Miller farm in Section 23, German Township, Harrison County, near Cadiz Junction, is drilling at 4,728 feet or 145 feet in the Corniferous lime which was topped at 4,583 feet. The test will probably reach the Oriskany sand this week as the lime section should not exceed 180 feet.

In Athens County, Leonard Wallace completed a test on the Benjamin K. Morris farm near Canaanville, Section 8, Athens Township, in the second Cow Run sand at 550 feet, gauging 100,000 feet. In Section 11, Lodi Township, C. P. Bowman completed a second test on the James Rogaski farm in the second Berea sand at 1,697 feet, gauging 150,000 feet.

In Jefferson County, John M. Elliott completed a test on the Frank S. King and William C. Brown lease in the northwest quarter section 7, Island Creek Township, in the Berea sand at 1,580 feet. It produced 2 bbls. the first day and will not be shot until conditions change.

In Muskingum County, Atha Oil Co. drilled a test on the Foster McGee farm in the southeast quarter Section 15, Union Township, in the Clinton sand, total depth 4,665 feet, and it had a showing of only 50,000 feet after shot and is being plugged.

SOUTHWEST PENNSYLVANIA

In Southwest Pennsylvania one small oil well and two gas wells were completed. In South Franklin Township, Washington County, the Union Gasoline and Oil Corp. completed the test on the C. T. Conn farm at 981 feet as a 5 bbl. producer. The Dunkard sand was topped at 915 feet with the oil showing at 975 feet.

In Greene County, Brummage and others completed the test on the S. G. Durr farm in Monongahela Township at 1,399 feet with the first Salt sand at 1,340-80 feet and 134,000 cu. ft. of gas at 1,344-46 feet.

In Monongahela Township, Greene County, Monongahela Oil & Gas Co. has started drilling No. 3 Vance Heirs and has reached 250 feet. In Springhill Township, North Eastern Oil & Gas Co. is drilling at 2,670 feet deepening No. 1 J. W. McNichols. In Wayne Township Cummins & Phillips have reached 3,175 feet deepening No. 1 W. E. Kerns.

In Greene Township, Greene County, Equitable Gas Co. completed the test on the George W. Hixenbaugh farm as a gas well gauging 67,000 feet a day at 2,967 feet. The Bayard sand was at 2,836-70 feet with the gas at 2,844 feet.

In Center Township, Greene County, Carnegie Natural Gas Co. ran 6⅝-inch casing to 2,315 feet and is shut down at 2,331 feet testing No. 4 J. H. Orndoff. In Morris Township, C. H. McVey has reached 1,210 feet in the test on the Elmas Laughman farm.

Washington County

In North Strabane Township, Washington County, Beedle, Glass and others are drilling on the J. Clark McNary farm and reached 1,025 feet. Keystone Drilling Co. is down 2,775 feet in No. 1 Frank Grego.

In Hanover Township, R. M. Duden and others are drilling at 1,732 feet in the test on the Roy Scarum farm. In Hopewell Township, McFadden & Co. reached 125 feet on the J. W. Reed farm. In Chartiers Township, Cannonsburg Iron & Steel Co. is drilling at 2,400 feet on its fee No. 2.

In North Fayette Township, Allegheny County, Young Brothers have reached 800 feet on the James Sturgeon farm.

Deep Tests

Practically all of the deep tests in Southwest Pennsylvania have reached an interesting phase. On Chestnut Ridge in North Union Township, Fayette County, Wasson & Co. topped the Onondaga at 6,959 feet in the test on the J. H. Sorg farm. The elevation of this test is 2,585 feet which places that formation at 4,374 feet subsea with a surface elevation of 2,585 feet. The Tully corrected measurement here was 6,400 feet. This places the Onondaga 115 feet lower than No. 1 Summit Hotel but as edgewater conditions are not feared from previous records, it will be closely watched. Casing has been ordered and will be set before the first pay is reached.

South of this in South Union Township, New Penn Development Co., William E. Snee and others are drilling at 6,799 feet on the Indian Creek Coal & Coke Co. William Johnson warrant lease. The formation has turned very black and it is indicative of reaching the Onondaga within a few feet.

South along the ridge in Springhill Township, Fayette County, L. J. Houze Convex Glass Co. reached 7,573 feet cleaning out the caving on top of the tools in the test on the Paul Dunham farm. This is within nine feet of the top of the tools lost 30 feet off bottom.

In Beaver County, Hanley & Bird are drilling at 4,550 feet on the S. Calvin farm in South Beaver Township. The Tully here was at 4,497 feet and a heavy gas blowout occurred below it causing a fishing job and the tools were recovered. Elevation is 1,208 feet.

In Mercer County, Carnegie Natural Gas Co. is drilling at 5,007 feet on the A. S. McCullough farm in Jefferson Township. At 4,991-4,993 feet, about the Newburg horizon, there was a showing of gas with no increase below it. The test is shut down for a new cable.

WEST VIRGINIA

Two small producers were completed in West Virginia during the week. In Roane County, Henderson Oil Co. completed a second test on the Alfred Moore Heirs farm in Curtis district in the Salt sand at 1,855 feet and it is good for 10 bbls. a day.

In Calhoun County, Kansas and West Virginia Oil & Gas Co. completed the second test on the S. H. Wilson farm in Sherman district in the Injun sand at 1,900 feet and it is a half barrel producer.

In Kanawha County, Owens Illinois Glass Co. drilled No. 1 Garnet Wiseman and others in Washington district to a total depth of 4,520 feet with the Corniferous lime at 4,425-94 feet; Oriskany 4,494-4,502 feet which was void of any showing. It was plugged back and the shales shot with 2,500 pounds of detonite. Thirty minutes after shot there was a gauge of only 250,000 feet a day.

In Clay County, Pittsburgh & West Virginia Gas Co. drilled No. 7663 E. L. Hyer in Otter district to 2,954 feet and it was dry.

In Gilmer County, Massey & Jarvis completed the test on the Milton Norris Heirs farm in DeKalb district in the Salt sand at a depth of 1,188 feet.

In Logan County, Boone County Coal Corp. completed M-13 fee in Logan district as a gas well at 3,322 feet.

In Tyler County, Grant-Athey drilled a test on the M. V. Smith farm in Union district through the Cow Run sand to 619 feet and it was dry and abandoned. In this district, J. E. Haught drilled a second test on the Jaqueline Thorn farm to 784 feet also through the Cow Run sand and it was dry.

In Wood County, Henderson Oil Co. drilled a test on the Ralph Smith farm in Williams district and it made a showing of one-fourth barrel a day in the Cow Run sand at 795 feet. It will be used for a pressure intake well.

Oriskany Gas Field

One well was completed in the Oriskany gas field in Kanawha County. In Poca district, United Fuel Gas Co. completed No. 4816 M. L. Miller and others at 4,960 feet, the Oriskany sand, and the final gauge was 12,293,000 feet a day. In this district the final gauge of Mullins Gas Co. test on the William Ernest Fisher farm completed in the Big lime at 1,935 feet was 4,337,000 feet a day.

In this district, United Carbon Co. topped the Corniferous lime at 4,822 feet on the J. H. Burdette farm. Virginia Gas Corp. topped that formation at 4,600 feet on the J. H. Burdette No. 2 lease. Godfrey L. Cabot, Inc. is drilling at 3,300 feet on the Putnam Co. lease and at 1,520 feet on the Helen M. Hoge farm. Spartan Gas Co. has reached 4,225 feet on the Ernest Fisher and others lease and Columbian Carbon Co. 680 feet on the L. M. Fields and others lease and in Elk district at 1,470 feet on the M. N. Landers and others lease.

In Poca district, United Fuel Gas Co. is building rigs for tests on the O. R. Schmittauer farm No. 4769; on the W. F. Beane No. 4814; on the W. P. Tolbert and others No. 4825; Janey Gibson and others No. 4826; on the O. D. Price and others No. 4827. This company is drilling at 1,806 feet in John Wines No. 4768; at 4,923 feet in Nancy Carney and others No. 4795; at 4,510 feet in C. O. Slater and others No. 4807; at 2,116 feet in J. A. Wines and others No. 4812; at 2,134 feet in Mamie A. Ray No. 4815; at 1,160 feet in W. M. Vance No. 4817; at 2,725 feet in W. H. Fisher No. 4818; at 707 feet in W. F. Beane No. 4822; at 1,623 feet in G. C. Patterson and others No. 4823; at 310 feet in M. R. Mairs and others No. 4828.

Outside Deep Tests

In Ravenswood district, Jackson County, Joe Rubin and Norwood P. Johnston and others have started drilling the D. P. Curry farm west of Lockhart. In Ripley district, Everett Starcher and others have

(Continued on Page 97)

California Field Report

By L. P. STOCKMAN

New Productive Zone Found in the Wheeler Ridge Field

LOS ANGELES, Calif., Jan. 16.—Richfield Oil Corp. proved a new deep productive zone in the Wheeler Ridge field of Kern County when its No. 1 Kern County Land in Section 28-11-20 was completed, flowing 1,880 bbls. of relatively clean 37.5 gravity oil and 700,000 feet of natural gas per day. This discovery well, which was spudded March 20, 1938, was bottomed at 9,272 feet, but was plugged back to 8,765 feet before being given a production test. The hole was finished with an 8⅝-inch water string cemented at 8,562 feet and 274 feet of 6⅝-inch liner including 198 feet of perforated casing landed at 8,765 feet, with 2½-inch tubing landed at 8,699 feet. The well is about 3,000 feet south of the nearest production on leases of Standard Oil Co.

Richfield Oil Corp. has leased 3,917 acres of land from Kern County Land Co., including some acreage once held by William G. McAdoo and General Petroleum Corp., along with 1,200 acres of government property held in a solid block.

The well required swabbing for 48 hours before it began flowing steadily through a ninety-six sixty-fourths inch bean.

The productive interval may be either the Stevens or Olcese zone but it is generally agreed that it is not the equivalent of the Rio Bravo zone. The anticlinal axis of the Wheeler Ridge field, based on upper zone production, is north of Richfield's new deep zone producer and thus if the well is on the Wheeler Ridge structure this deep zone will be exceptionally large in areal extent.

The Wheeler Ridge field, discovered by Standard Oil Co. on Nov. 24, 1922, is in the extreme southern end of the San Joaquin basin, high up in the foothills, which rise rather abruptly from the level plateau extending northward. The Wheeler Ridge field has only been of secondary importance but this new deep horizon may greatly stimulate future production.

TANKER SHIPMENTS FROM LOS ANGELES TO DOMESTIC AND FOREIGN PORTS

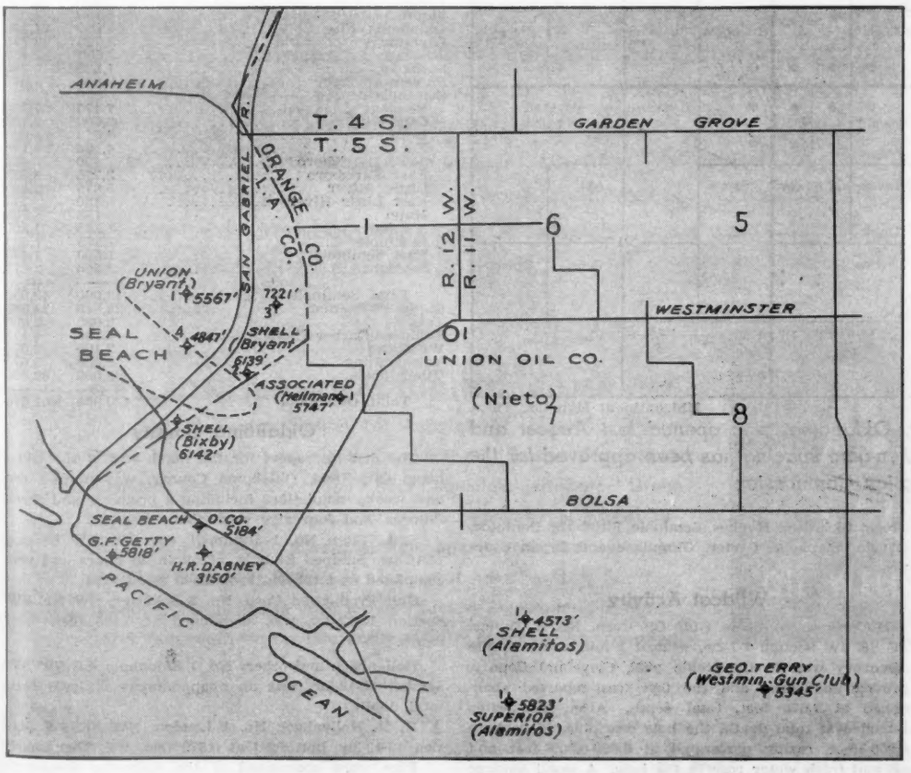
	January 7		December 31			
Intercoastal-domestic	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Fuel oil	61,980	8,854	137,878	19,697	61,980	.....
Diesel and gas oil	91,133	13,019	.....	.....	91,133	.....
Gasoline	.....	.....	52,886	7,555	.....	.....
Foreign exports—						
Crude oil	151,597	21,657	337,560	48,223	151,597	123,496
Fuel oil	125,341	17,906	30,282	4,326	125,341	.....
Diesel and gas oil	100,570	14,367	160,239	22,891	100,570	82,125
Gasoline	92,306	13,187	490,477	70,068	92,306	79,846
Kerosene	.....	.....	26,196	3,742	.....	108,510
Lubricants	.....	.....	17,846	2,549	.....	.....
Coastwise-domestic—						
Crude oil	306,561	43,794	110,608	15,801	306,561	139,042
Fuel oil	148,537	21,220	451,996	64,571	148,537	405,530
Diesel and gas oil	30,116	4,302	108,289	15,470	30,116	43,789
Gasoline	151,214	21,602	459,184	65,598	151,214	433,371
Kerosene	18,988	2,713	5,933	848	18,988	6,706

TANKER SHIPMENTS FROM SAN FRANCISCO TO DOMESTIC AND FOREIGN PORTS

Intercoastal-domestic—						
None recorded.						
Foreign exports—						
Fuel oil	.....	.....	112,449	16,064	.....	.....
Diesel and gas oil	.....	.....	255,601	36,514	.....	.....
Gasoline	.....	.....	66,923	9,560	.....	.....
Lubricants	.....	.....	28,190	4,027	.....	.....
Coastwise-domestic—						
Fuel oil	185,123	26,446	139,654	19,951	185,123	169,782
Diesel and gas oil	29,525	4,218	83,712	11,959	29,525	39,416
Gasoline	169,260	24,180	169,897	24,271	169,260	198,311
Kerosene	26,194	3,742	14,922	2,132	26,194	18,140

Los Alamos

Douglas Stratton Oil Co. in the Los Alamos district of Santa Barbara County, completed No. 1 in Section 8-8-33, pumping 250 bbls. of 29.1 gravity oil per day, cutting 25 per cent water. This wildcat is about two miles south of the Orcutt section of the Santa Maria field, and the nearest production is Shell Oil Co.'s wells on the Carreaga property. Production of the Douglas Stratton well is believed to be coming from fractured Monterey shale with the well apparently on a broad plunging nose separated from the Orcutt section of the Santa Maria field by a fault against which oil has accumulated in the fractured shale. The hole was bottomed at 7,237 feet and was finished with a 7-inch water string cemented at 5,745 feet and a 5-inch liner carrying perforations at 6,467-7,190 feet. Top of the Sisquoc was logged at 1,545 feet. Sponsors of this company are officials of the Douglas Aircraft Co., of which Donald Douglas is president.



Union Oil Co. has staked location for a well to be drilled on the Hellman property east of the Seal Beach field of Orange County in an area not heretofore tested out

Rio Bravo

In the Rio Bravo field of Kern County Union Oil Co. No. 7-34 Kern County Land, was completed, flowing 5,988 bbls. of 36.4 gravity oil and 2,500,000 feet of natural gas per day and General Petroleum Corp. No. 3 Wagner was finished, flowing 3,962 bbls. of 37.5 gravity oil and 4,530,000 cu. ft. of gas daily. It is probable that Union Oil Co. has found the outer limits of production in the southern end of the field as its No. 7-34 Kern County Land is cutting 20 per cent salt water, which shows a titration of 1,400 grains of salt per gallon. This well, in Section 34-28-25 was bottomed at 11,515 feet and finished with 159 feet of 5-inch liner including 106 feet of perforated at 11,406-512 feet and 11,330 feet of 2½-inch tubing. Union's No. 7-34 Kern County Land, on the southwest flank of the anticline, is lower structurally than any well drilled in that part of the field. General Petroleum Corp. No. 3 Wagoner in Section 35-28-25 was a normal completion, having been bottomed at 11,515 feet and finished with a 6⅝-inch water string landed at 11,333 feet and 226 feet of 4¾-inch liner including 150 feet of 125 mesh landed at 11,513 feet and 11,099 feet of 2½-inch tubing. Top of the Rio Bravo zone was logged at 11,365 feet and the well was brought in flowing through a forty-nine sixty-fourths inch bean. Both wells have been pinched to a maximum not exceeding 300 bbls. per day.

Southeast Coalinga

Superior Oil Co. found the Gatchell sand in No. 1 Cagle, an outpost in the northeastern part of the Southeast Coalinga field of Fresno County, and if this zone

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Oklahoma Operations

By DAL DALRYMPLE

Deep Wildcats in Comanche, Ellis Counties to Be Drilled

Deep wildcat tests of considerable interest are to be drilled in Comanche and Ellis counties, western Oklahoma, according to recent announcements. The Comanche County test is the Kerlyn Oil Co. No. 1 Laging, C NE SW Section 30-4n-9w, a location. It is along the flank of the Wichita uplift from the Anadarko basin, and is to seek production around 6,500 feet, with the possibility it may be drilled deeper if unproductive at that level. Location is south of the Cement field in Caddo County and west of the Chickasha gas field in Grady County. The Ellis County test is that of J. E. Elliott and associates at No. 1 Teton, SE NE Section 35-20-25w, northwest of Arnett. It will be the first deep test on a lease block of 200,000 acres. Derrick and material has been moved to the location. Three other tests in the area are proposed.

Champlin Refining Co. No. 1 Mackey, NW NW SE Section 4-24-8w, south offset to the discovery well in the Hillsdale pool, Garfield County, had increased production on successive tests the past week. It flowed 136 bbls. of oil last Saturday, against 105 bbls. the previous day and 78 bbls. last Thursday. It was bottomed at 6,697 feet. Same company's No. 2 Boehm, NE SE NW Section 4-24-8w, was bottomed at 6,650 feet in first Wilcox sand and the crew was preparing to drill plug.

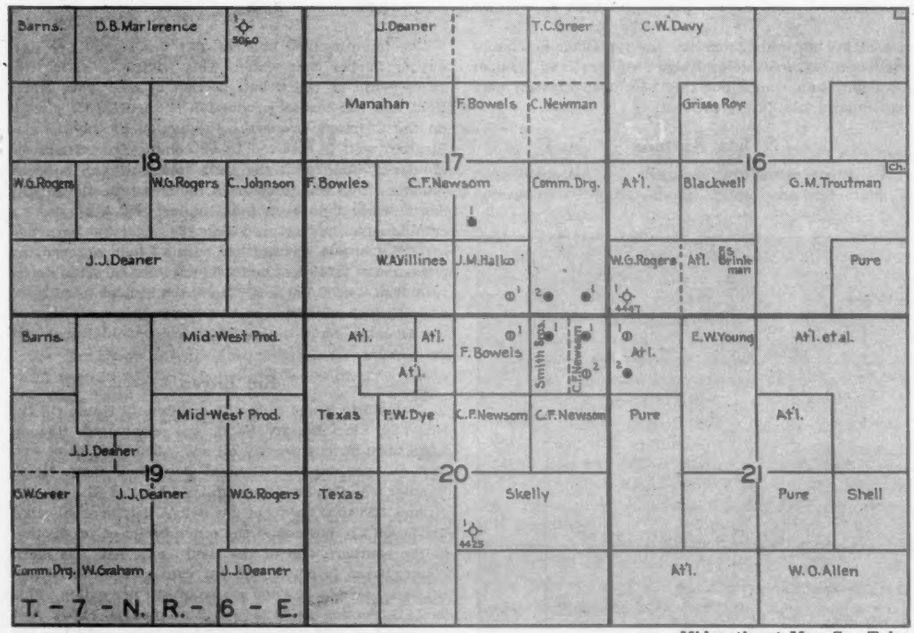
Burke-Greis Oil Co. No. 1 Albert, SE SW NW Section 19-7-1w, is the most interesting wildcat in the Noble area, Cleveland County, following failure of Gulf Oil Corp. No. 1 Taylor, in Section 1-7n-2w. The No. 1 Albert topped Hunton lime at 6,885 feet, said to be structurally high in that area. Operators were drilling ahead.

A new dolomite producer has been added in the North Grayson pool, Seminole County, giving that area one Wilcox sand and two dolomite wells. Superior Oil Co. No. 2 Tiger, SW SE SE Section 12-6-5, the new well, was bottomed at 3,805 feet in dolomite and estimated good for 125 bbls. of oil naturally, daily. It is a south offset to the discovery well, Superior Oil Co. No. 1 Tiger, productive from dolomite. The other well, Mid-Continent Petroleum Corp. No. 1 Tiger, NE SW SE Section 12-6-5, found production in Wilcox sand.

Another good Prue sand producer was near completion in the Sac and Fox field, Lincoln County, at Wilcox Oil & Gas Co. No. 2 Terry, SE cor. Section 9-14-6. Prue sand was topped at 3,040 feet, the well was shot with 175 quarts at 3,051-3,129 feet, total depth, and flowed 270 bbls. of oil in the first 24 hours.

Drilling on the townsite at Cement, Caddo County, is to be restricted. The Cement city council has passed an ordinance restricting drilling to one well to the block, with a $10,000 bond and $100 drilling permit required for each well. Work was due to start at first test on the townsite at York-Kan Oil, Inc., in Block 42, southeast part of the town.

The next oil and gas lease sale of the Five Civilized Indian Tribes will be held at the agency in Muskogee January 24, A. M. Landman, superintendent, announced. Leases will be offered in Rogers, Tulsa, Creek, Okfuskee, Hughes, Seminole, Pittsburg, Pontotoc, Garvin, Stephens, Carter, Okmulgee and Bryan counties.



Midcontinent Map Co., Tulsa

The West Little River pool in Seminole County, Oklahoma, was opened last August and now has six producers and four drilling wells. Ten-acre spacing has been approved for the field by the Corporation Commission

Wildcat Activity

Efforts to complete Gulf Oil Corp. No. 1 Taylor, SE SE SW Section 1-7-2w, wildcat 1 mile north of the discovery well in the Noble pool, Cleveland County, proved unavailing and the test was reported abandoned at 7,676 feet, total depth. After salt water intruded at total depth, the hole was plugged back to 6,955 feet, casing perforated at 6,880-6,909 feet and oil and fresh water rose in the hole. A small amount of oil was recovered by bailing, but water predominated and abandonment followed.

Burton Petroleum Corp. No. 1 Zerger, C SE SW Section 5-18-6w, one of two wildcats in Kingfisher County, was bottomed at 3,510 feet, tools were moved out and it was temporarily abandoned. The other Kingfisher outpost, Gutowsky, Trigg, Garr and others No. 1 Lankard, NE NE SE Section 34-17-6w, was drilling below 4,400 feet.

E. M. Eldridge No. 1 White, C NE NE Section 30-11-1e, wildcat south of the old Newalla area in southeastern Oklahoma County, had dug cellar and pits.

Kerlyn Oil Co. No. 1 Laging, C NE SW Section 30-4-9w, was location for a wildcat in Comanche County.

Estimated Daily Production

Estimated daily production for Oklahoma for the week ending January 14, and for the preceding week was as follows:

	Barrels	
	Jan. 14	Jan. 7
Allen	5,975	6,025
Billings	5,050	5,225
Burbank	7,600	7,575
South Burbank	9,275	9,350
Balance Osage	16,250	16,000
Blackwell district	3,950	3,975
Bristow-Slick	6,725	6,850
Chandler	1,900	1,875
Crescent	3,425	3,375
Cromwell	3,150	3,175
Cushing-Shamrock	10,275	10,300
Duncan district	4,250	4,275
Edmond	4,625	4,700
Fish	2,825	2,875
Fitts	31,475	33,100
Jesse	2,525	3,025
Graham-Fox	4,500	4,725
Gray	825	850
Healdton	9,575	9,425
Hewitt	3,425	3,450
Keokuk	3,750	3,825
Konawa	1,225	1,200
Lucien	7,700	7,750
Moore	4,150	4,050
Oklahoma City	95,600	74,300
Olympic	3,725	3,775
Ramsey	2,550	2,450
Sasakwa	1,325	1,300
Sholem-Alechem	2,525	2,675
Seminole district:		
Bowlegs	7,475	7,350
Carr City	2,700	2,725
Dora	4,550	4,625
Earlsboro	4,150	4,125
South Earlsboro	450	475
East Earlsboro	3,775	3,875
Little River	5,875	5,925
East Little River	750	775
Maud	775	725
Mission	1,325	1,300
Seminole	7,375	7,400
East Seminole	1,500	1,475
Searight	2,300	2,275
Total Seminole	43,000	43,050
St. Louis-Pearson	23,875	24,225
Tatums	2,025	2,000
Tonkawa-Garber-Thomas	4,150	4,175
Wewoka	2,100	2,075
Yale-Jennings	3,650	3,675
Other pools	82,000	82,000
Total Oklahoma	420,950	402,675

Oklahoma County

The drilling report for the north end of the Oklahoma City field, Oklahoma County, was purged the past week, completions including a producer and three failures, and four rigs were abandoned.

S. L. Clum No. 1 Rummell, SW SW NW Section 15-12-3w, pumped 84 bbls. of oil in 24 hours and was completed at total depth of 6,549 feet.

Gulf Production Corp. No. 2 Schuster, SW NE SW Section 15-12-3w, was abandoned at 6,485 feet, total depth.

Hollenbach and others No. 1 Sinopoula, SE SW SW Section 15-12-3w, was an abandonment at 4,800 feet, total depth.

H. R. Hollenbach No. 1 Lauden, NW SE SW Section 15-12-3w, bottomed at 6,379 feet, was abandoned.

Rigs were abandoned at the following locations: Prairie Oil Co. No. 1 West, NW SE SW Section 15-12-3w; Gulf Production Corp. No. 4 Schuster, NE SW

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SW Section 15-12-3w; same operator's No. 7 Schuster, SE SW SW Section 15-12-3w; same operator's No. 8 Schuster, NW SW SW Section 15-12-3w.

Logan County

Helmerich & Payne, Inc., No. 1 Humphreys, NE NE SW Section 27-16-1e, in the Meridian area, Logan County, topped Viola lime at 5,170 feet, had Wilcox sand at 5,251-97 feet, and was dry and abandoned at 5,318 feet, total depth.

Osage County

Peters Petroleum Corp. and Sinclair-Prairie Oil Co. No. 23 Osage, SE NW NE Section 24-24-7, Osage County, found sand at 743-778 feet, total depth, pumped 10 bbls. of oil in 24 hours and was completed.

Sand Springs Home No. 2 Osage, NW SW NE Section 30-20-11w, failed to find production and was abandoned at 2,413 feet, total depth, in sand.

New work in Osage County: Barnsdall Oil Co. No. 7 Osage, SE NW SW Section 23-24-10, location; Indian Territory Illuminating Oil Co. No. 1 Osage, NW NW SE Section 26-25-6, location; W. C. Norris No. 10 Osage, NE SW SE Section 24-25-8, location.

Lincoln-Creek Counties

Wilcox Oil & Gas Co. No. 14 DeLozier, NW NW NW Section 15-14-6, in the Sac and Fox field, Lincoln County, topped Prue sand at 2,948 feet, was bottomed at 3,037 feet, was shot with 130 quarts and pumped 100 bbls. of oil in 24 hours.

Curtis Oil Co. No. 1 Secrest, NW NE NW Section 17-16-11, Creek County, was abandoned at total depth of 2,805 feet.

Tibbens Oil Co. No. 8 Wilson, SE NE NW Section 18-14-9, southern Creek County, was completed as a 5-bbl. pumper after shooting Prue sand topped at 2,307 feet, total depth 2,344 feet.

Allied Materials Corp. No. 3 Laffoon, NE SW NE Section 9-13-6, Laffoon area, Lincoln County, was a location.

Stephens County

Carl Carter completed a 12-bbl. pumper at No. 1-D Warden, NE SE NW Section 34-1s-5w, Velma pool in Stephens County. It found sand at 698-714 feet, was bottomed at 751 feet and plugged back to 720 feet to complete.

George L. Pace No. 16 Payne, SW NE NW Section 28-2s-7w, Comanche area, had sand at 997-1,004 feet, total depth, and produced 3,000,000 cu. ft. of gas daily.

New activity in Stephens County: Carl Carter No. 2-D Warden, NE SE NW Section 31-1s-5w, Velma area, was rigging up machine; McAllister-Lewis No. 1 Parrett, SE NW SW Section 1-2s-8w, Empire field, was drilling below 200 feet; George L. Pace No. 5 Gilworth, SW SE NW Section 2-2s-8w, had dug pits.

Beckham-Texas Counties

Fred Coogan No. 1 Neil, C SE NW Section 10-9-25w, Erick district, Beckham County, was completed for big gas production in dolomite at 3,251-3,490 feet, total depth. It produced 71,000,000 cu. ft. of gas daily, with 1,060 pounds rock pressure.

Turner & Williams No. 1 Clark, NW cor, Section 1-5-19ecm, Texas County, Oklahoma Panhandle, was reported temporarily abandoned at 130 feet.

New Activity Reported

First reports of new operations in several Oklahoma counties for the past week included:

(Continued on Next Page)

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North Louisiana, Arkansas

By GEORGE WEBER

Shreveport Field Extension Is Enlarging Its Importance

Shreveport, La., Jan. 16.—The Shreveport field was extended 1 mile to the south late this week, in the most important field development of the past few days in the tri-state area. Two wildcats attracted attention to Lafayette County, Ark., and Marion County, Tex., with showings of oil, although their completion as producers is not believed imminent. A third wildcat, a deep exploratory test in the Carterville field of Webster Parish, La., was abandoned after several weeks of testing and completions attempts.

The Shreveport field took on added importance with the completion of W. C. Feazel and others No. 1 Hughes, in the SE cor. Section 33-18-14. The well, drilled in an east offset position to C. D. Loe No. 1 Meyer, and lying across Cross Lake from the original Allison discovery well, cored porous lime in the Pettit horizon at 5,555-73 feet. A string of 5½-inch casing was set at 5,589 feet, with total depth at 5,590 feet. Late in the week perforations were shot at 5,565-70 feet, and after swabbing seven times, the well kicked off and flowed into burning pits.

The well made an estimated 25 bbls. per hour through a quarter-inch tubing choke, but lack of storage prevented an accurate gauge being made. Upon shutting in, the test showed a shut-in casing pressure of 1,000 pounds with 950 pounds on the tubing. Before shutting in for storage, the well was flowed through tubing and casing to assist in cleaning.

Extension of the field to the south shore of Cross Lake has been indicated for several weeks, with the show of oil in C. D. Loe No. 1 Meyer. The outpost, however, has given considerable trouble in making salt water which could not be shut off. After swabbing dry and showing some oil this past week, No. 1 Meyer was acidized with 500 gallons, and began flowing by heads at an estimated rate of 5 bbls. per hour, the fluid consisting of 50 per cent salt water, on a one-eighth inch choke. The well ceased flowing during the week, and operators are arranging to swab again. Total depth is 5,631 feet, and present perforations are at 5,590-5,600 feet.

Pine Island

The Pine Island area, which has attracted some attention recently with completion of a small producer in the Woodbine, will get another test shortly. The wildcat, Colonial Corp. No. 1 Thigpen & Herold, on the west flank of the Pine Island structure, was brought in several days ago making an estimated 468 bbls. daily through a 2-inch flow line, with casing pressure at 475 pounds and tubing pressure at 20 pounds. The well, producing through perforations at 2,457-65 feet, went dead shortly after initial flow, however, and at latest reports, after tubing was pulled and cleaned, it was flowing in heads, and making salt water. An offset test has been staked by Burnham Drilling Co., and operations are expected to begin shortly.

Across the state line, in Marion County, Tom Bell No. 1 Moseley, in the Lane Survey, was making a small amount of oil this week while swabbing. Since that time, however, operators have discontinued swabbing and are pulling tubing. The swab could not be run lower than 2,200 feet.

Lafayette County

Considerable interest is being shown in a wildcat drilled by Shell Petroleum Corp. and Ohio Oil Co. in the Stamps area of Lafayette County, South Arkansas. The test, No. 1 Warren, C SE SE Section 13-16-24, during the past week cored at 7,170-90 feet and recovered 8 feet of dolomitic shale, and 1 foot of slightly porous oolitic lime with pin points of oil and gas bubbles. A drill-stem test was made at 7,142-90 feet and 120 feet of mud cut with oil was recovered in eight minutes.

The hole was cored from 7,190-7,215 feet, showing a soft oolitic lime with a show of oil. A second drill-stem test at 7,189-7,215 feet recovered four joints of salt water and eight joints of oily cut mud in 10 minutes. Bottom hole temperature is reported at 160° F., and bottom hole pressure is 3,400 pounds.

The hole was cored further from 7,215 to 7,222 feet and a fine soft oolitic lime was recovered, with a show of oil. Another drill-stem test, at 7,171-7,228 feet, failed when the seat gave away at the end of four minutes, with pressure built up to 6 pounds. The drill stem, on inspection, contained 1,290 feet of fluid, of which the top 150 feet was mud with brackish water taste, the next 450 feet was mud cut with oil and salt water, and the bottom 690 feet was brackish drilling mud.

The important deep test has encountered the following markers: Top of the Buckner 6,893 feet, top top of the Smackover lime 7,171 feet, and top of the Reynolds, oolitic lime section of the Smackover, 7,179 feet.

Production by Pool

Estimated daily gross production in the week ending January 14:

NORTH LOUISIANA

	Bbls.
Bellevue	675
Caddo light	4,085
Caddo heavy	2,650
Converse	510
Cotton Valley heavy	100
Cotton Valley light	*10,835
Cross Lake	1,825
De Soto and Red River	1,220
Elm Grove	260
Haynesville	2,815
Holly	80
Homer	2,655
Lisbon	9,095
Pleasant Hill	90
Rodessa	29,875
Sarepta-Carterville	†450
Sligo	1,740
Sugar Creek	275
Urania	2,635
Zwolle	2,590
Total	74,460

SOUTH ARKANSAS

Buckner	1,410
Champagnolle	1,685
El Dorado	1,750
Lisbon	250
Miller County	335
Nevada	610
Rodessa	5,560
Schuler	17,880
Smackover light	1,960
Smackover heavy	15,315
Stephens	515
Troy	1,000
Urbana	1,105
Village	1,570
Total	50,945

Texas side of Rodessa field 29,430 bbls. daily.
*4,605 bbls. is distillate.
†100 bbls. is distillate.

Columbia County

To the east in Columbia County, center of much current interest, a good producer was brought in in the Magnolia field, as the Normandie Oil Co. completed No. 1 L. Garrett, C NE NE Section 23-17-20. The test gauged an initial of 19 bbls. per hour through a three-sixteenths inch choke with tubing pressure of 1,200 pounds and casing pressure of 1,450 pounds. The Smackover lime, a soft oolitic section, was cored at 7,405-7,523 feet and the hole was drilled to 7,545 feet, with 5½-inch casing set at 7,505 feet. Prospects in the Magnolia field have been considerably enhanced during the past several weeks, with completion of a number of good producers.

Schuler Field

The Schuler field of Union County gained two new producers, and was further defined on the north edge by a second failure. The two new wells, Phillips Petroleum Co. No. 3 Brian and No. 2 Miller, gauged 259 bbls. on a quarter-inch choke, and 275 bbls. per day on the same-size choke, respectively. The failure on the north edge is Phillips Petroleum Co. No. 1 J. E. Shatford, which topped the Jones sand at 7,570 feet and is bottomed at 7,700 feet. The Jones sand showed only a very thin section.

North Louisiana's principal deep wildcat for several weeks, Magnolia Petroleum Co. No. 1-C Pardee Lumber Co., C NW NE Section 17-23-11, was abandoned this week after failing to find commercial production in sands showing oil. The test, drilled on the flank of the old shallow Carterville field, in northern Webster Parish, was carried to a total depth of 10,066 feet before plugging back to sections which showed production possibilities. Last week the well was shot with 140 quarts of nitroglycerin at 5,930-86 feet, and after acidizing with 5,000 gallons, it showed 36 bbls. of oil. However, the test swabbed dry, and was abandoned at 5,986 feet.

Oklahoma Fields

(Continued from preceding page)

Pottowatomie County—Sam Vierson No. 2 Palmer, SW SE NW Section 32-7-5, St. Louis district, rig; Alma Oil Co. No. 1-A Smith, CS½ SE NE Section 32-7-5, rigging up rotary; W. A. Villines No. 2 Millson, SW NW SW Section 23-7-5, rig; G. C. Gibbin No. 1 Meazel, SW NW SE Section 7-7-4, cellar and pits; Iglehart & Vinson No. 1-A Higdon, NW NW NE Section 5-6-5, location.

Seminole County—W. C. McBride, Inc., No. 1-B Gainer, NE SW SW Section 20-6-7, drilling below 1,165 feet; Sunray Oil Co. No. 1 Millsap, NW SW SW Section 7-6-6, Mathis area, cellar and pits; Stanolind Oil & Gas Co. and Amerada Petroleum Corp. No. 1 Wilson, NW SW NE Section 4-5-6, Tyrola pool location.

Pontotoc County—Barbara Oil Co. No. 5 Mount, NE NW NW Section 36-5-7, Allen field, location; Sinclair Prairie Oil Co. No. 7 McCarty, SW SE SE Section 15-2n-7, Fitts field, drilling below 50 feet; Simpson-Fell & Westheimer No. 1 Bates B, NE NE SW Section 26-2n-7, location; Senora Oil & Gas Co. No. 1 Burke, SW SW SE Section 25-5-4, Bebee area, drilling below 300 feet; Moday Drilling Co. No. 1-A Killcrease, NW SE NW Section 7-4-8, North Steedman district, a rig.

Payne County—Mid-Continent Petroleum Corp. No. 8 Ramsey, NE NW NW Section 18-18-2e, Ramsey pool, cellar.

Eastern Oklahoma—J. P. Walker No. 1-A Childers, SW SW NW Section 23-17-16, Wagoner County, location; Otis Blankenburg No. 1 Kelly, NW SE SW Section 10-13-10, Okfuskee County, cellar and pits.

Southern and southwestern counties—Mutual Investment Co. No. 1 Neil, NW SW NW Section 24-5s-5e, Madill area, Marshall County, drilling below 329 feet; Kerbow & Britten No. 1 Leona, SW SE SE Section 31-1n-19w, Tipton area, Jackson County, derrick; H. W. Weir No. 1 Carmichael, NE NE SW Section 23-7s-7w, Jefferson County, drilling below 102 feet; T. H. McCasland No. 1-A Horsman, NE NE SW Section 8-3n-5w, Knox field, Grady County, derrick; J. M. Creel No. 1 Karthouse, NW NW SW Section 35-2n-10w, Lawton field, Comanche County, drilling; S. T. Moore Co. No. 2 Bluebough, NE NE SE Section 2-6n-17w, Kiowa County, drilling.

Kansas Developments

By
DAL DALRYMPLE

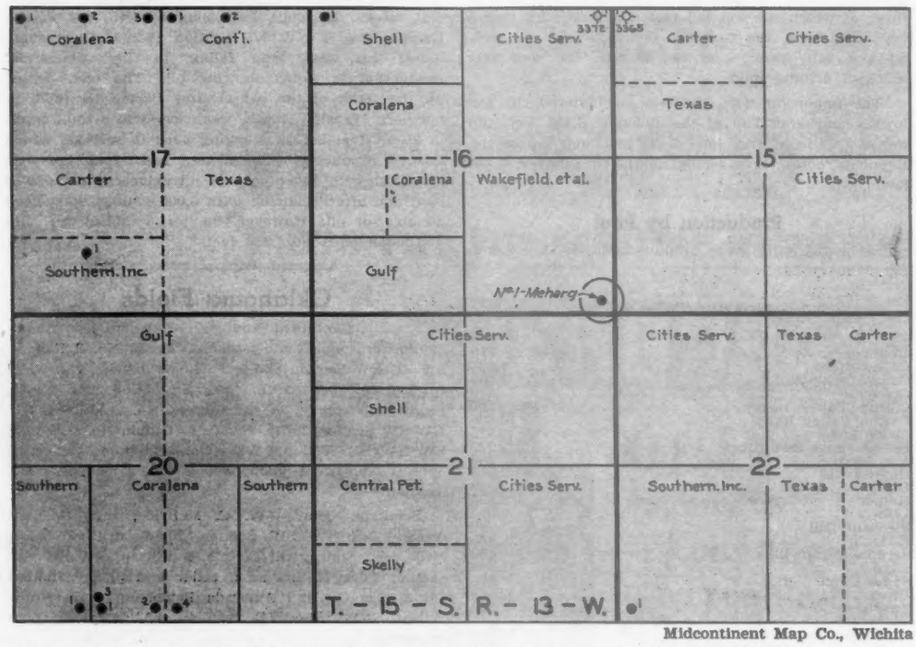
Gas Gauges 26,100,000 Cu. Feet in Third Well at Derby

The Derby gas pool in Sedgwick County, about 7 miles southeast of Wichita, looms larger on the Kansas horizon following completion of the third gas well in the area the past week. Lauck Petroleum Co. and others No. 1 Goodacre, NW NW SE Section 32-28-2e, gauged 26,100,000 cu. ft. of gas daily to rate as the largest gas well ever completed in Sedgwick County. Producing from Stalnaker sand at 2,195 feet, total depth 2,221 feet, it also was said to be the largest gas well ever completed in Kansas in that formation. The gas will be taken by Cities Service Gas Co.

An Arbuckle lime pool apparently has been opened in Elk County, 2 miles northwest of Howard and in daily from total depth of 3,010 feet in Lansing lime.

A new pay horizon was uncovered in the Ainsworth pool, Barton County, at Skelly Oil Co. No. 1 Gage, SE SE SW Section 35-16-13w. It swabbed 45 bbls. of oil in 3 hours through tubing after perforating casing at 2,902-08 feet and 2,914-29 feet, producing from Topeka lime. The pay zone is about 400 feet shallower than Arbuckle producers to the west in the Ainsworth pool. The crew was preparing to test.

New producers were near completion in several recently opened one-well pools. Sinclair Prairie Oil Co. and others No. 1 Seyfert, NE cor. Section 29-16-11w, south offset to the discovery and lone producer imminent at National Refining Co. No. 1 Lucas, SW NE SE Section 10-28-6. It was to be tested after acidizing Simpson dolomite at 3,047-49 feet, total depth.



Midcontinent Map Co., Wichita

The proximity of Wakefield and others No. 1 Meharg, new strike in Russell County, Kansas, to the Coralena area to the north and the Fairfield area to the south is shown by map

the old Dunkelberger area. Morrow and Son No. 1 Burke, Section 34-29-10, found the first break in Mississippi lime dry and was deepened to Arbuckle lime at about 2,200 feet, total depth. Oil of 25 degrees gravity rose 2,000 feet in the hole. It had not been tested. Other production in the Dunkelberger pool is from Kansas City lime.

A Barton County wildcat gave promise of opening a new area in that prolific sub-division of the state. It was Amerada Petroleum Corp. No. 1 Kruckenberger, C NE NE Section 14-19-15w, between the Albert and Heizer pools. Arbuckle lime was topped at 3,572 feet, with oil showing in a core from 5,580-85 feet. The crew was bailing preparatory to testing. Seven-inch casing was set at 3,575 feet. It is near the center of a block of 12,000 acres.

The prospective McPherson County pool opener, Marylyn Oil Co. No. 1 Dixon, NE NW Section 7-19s-2w, was due to be acidized. It swabbed 30 bbls. of oil in 12 hours and has been producing on swab tests from Chat topped at 2,986 feet, total depth, 3,019 feet.

The Gurney pool in Russell County was extended one-fourth mile northwestward at Stanolind Oil & Gas Co. No. 1 Boxberger, SW SE SW Section 14-14-14w. It was acidized and made potential of 679 bbls. of oil in the Prusa pool, Barton County, had nearly 2,000 feet of oil in the hole from Arbuckle lime at 3,342-50 feet. Operators were running liner inside of 7-inch casing, and were to deepen somewhat before completing.

Gerald M. Smith No. 1-A Kingsbury, NW NE NW Section 9-33-6e, east offset to the discovery well in the Wilson pool, 11 miles southeast of Winfield in Cowley County, found Arbuckle lime at 3,510-12½ feet, and oil rose to the top of the casing in eight hours. The crew was preparing to drill in after pulling the big pipe. Five and one-half inch casing was set at 3,506 feet.

Continental Oil Co. No. 1 McCune, SW SW NE Section 12-25-13w, second well in the Leesburgh pool, southeast of St. John in Stafford County, pumped 91 bbls. of oil an hour from total depth of 4,090 feet in Arbuckle lime and was due for potential test.

The West Wenke pool in Rice County was given its second producer at D. R. Lauck and others No. 1 Berscheit, NW NW SW Section 18-20-10w. It made potential of 380 bbls. of oil from Arbuckle lime at 3,292 feet, total depth.

Extension of the South Kramer pool in Butler County one-fourth mile to the southwest appeared

Estimated Daily Production

Estimated daily production for Kansas for the week ending January 14, and for the preceding week was as follows:

	Barrels	
	Jan. 14	Jan. 7
Oxford City	1,000	975
Burrton	8,625	8,675
Ritz-Canton	3,975	3,950
Graber	2,900	2,550
Hollow-Nikkel	1,750	1,775
Lerado	925	575
Voshell	1,900	1,925
Wellington	2,200	2,100
Ellsworth County:		
Lorraine	1,750	1,250
Other pools	1,350	1,105
Rice-Barton counties:		
Bloomer	1,950	1,425
Chase	4,250	3,100
Geneseo	3,575	3,625
Raymond	750	650
Silica	9,750	8,125
South Silica	1,900	1,275
Keesling	375	850
Miscellaneus Rice	6,000	5,680
Miscellaneous Barton	7,610	6,640
Wherry	3,925	2,250
Russell County	22,625	17,875
Sedgwick County	4,185	3,950
Ellis:		
Bemis	5,975	5,250
Miscellaneous	3,330	2,270
Kingman County	655	690
Stafford County	4,950	4,085
Greenwood County	8,900	8,950
Butler County	19,625	18,525
Other fields	15,695	17,055
Total Kansas	152,300	137,150

Wildcat Operations

All of the three wildcats listed as completions in Kansas the past week were failures. Phillips Petroleum Co. No. 1 Tanzey, C NW SW Section 25-8-18w, wildcat in Rooks County, found Arbuckle lime at 3,415-24 feet, total depth, and was abandoned temporarily.

Earl Henderson No. 1 King, NE cor. Section 22-31-4, Cowley County wildcat, was dry and abandoned at 3,041 feet, total depth.

Klopton and associates No. 1 Poston, NE NE SE Section 31-26-14, wildcat in Woodson County, failed to find production and was abandoned at 1,525 feet, total depth.

Century Petroleum Co. No. 1 Wilke, SW SE SW Section 1-29-2e, wildcat east of Derby in southeastern Sedgwick County, was drilling below 130 feet.

Stafford County

Stanolind Oil & Gas Co. No. 4 Volker B, CW½ SE SW Section 14-24-11w, in the Zenith field, Stafford County, found Misener sand pay at 3,807-17 feet, total depth, and flowed 193 bbls. of oil in the first 4 hours, making potential of 2,012 bbls. daily.

E. H. Moore, Inc. No. 1 Wallace, NW NW NE Section 24-24-11w, on the east side of Zenith, was dry and abandoned in sand at total depth of 3,812 feet.

E. H. Moore, Inc. No. 12 Johnson, SE NE SE Section 13-24-11w, was rigging up rotary, and same operator's No. 13 Johnson, NE NE SE Section 13-24-11w, was building rotary rig.

Russell County

Cities Service Oil Co. No. 2 Carter, NE NW NE Section 29-14-13w, West Letsch area, Russell County, pumped 327 bbls. of oil in 8 hours and was rated potentially at 981 bbls. of oil daily, with 3 per cent water. It found Lansing lime at 2,985-92 feet and was bottomed at 2,998 feet.

In the Gurney district, Stanolind Oil & Gas Co. No. 1 Boxberger, SW SE SW Section 14-14-14w, had

Lansing lime at 2,981-86 feet, total depth 3,010 feet, pumped 226 bbls. of oil in 8 hours and made daily potential of 679 bbls.

Mid-Continent Petroleum Corp. No. 1 Ochs, NW SW NE Section 35-15-14w, Schneider pool, was completed in Arbuckle lime at 3,350-56 feet, total depth. It pumped 551 bbls. of oil in 8 hours, making daily potential of 1,654 bbls.

Phillips Petroleum Co. No. 1 Mollie, NW NW NE Section 35-15-14w, pumped 445 bbls. of oil in 8 hours to gain potential rating of 1,304 bbls. of oil daily. Production was from Arbuckle lime at 3,350-56 feet, total depth.

New operations in Russell County: W. I. Southern, Inc. No. 4 Meharg, NW NW NE Section 18-15-13w, Coralena area, drilling below 1,530 feet; Western Kansas Oil & Refining Co. No. 2 Schneider, SE NE NW Section 35-15-14w, Schneider pool, rigging up rotary; Darby Petroleum Corp. No. 11 Michaelis, SW NW SE Section 36-15-14w, Trapp field, location; Hinkle Oil Co. No. 1 Krug, SE SE SW Section 8-14-14w, location.

Ellsworth County

Transwestern Oil Co. No. 2 Disque, NE NE SE Section 32-17-10w, Bloomer-Stumps district, southwestern Ellsworth County, entered Arbuckle lime at 3,255 feet, was bottomed at 3,290 feet, pumped 605 bbls. of oil in 8 hours and made daily potential of 1,814 bbls.

Rice County

Continental Oil Co. completed two large producers in the Geneseo field, Rice County. The larger was No. 2 Lewis, SE NW NW Section 13-18-8w. It found Arbuckle lime at 3,233-37 feet, total depth, pumped 774 bbls. of oil in 8 hours and made daily potential of 2,321 bbls.

The company's No. 1 Poland, SW SW SE Section 30-18-7w, topped Arbuckle lime at 3,158 feet, was bottomed at 3,167 feet, pumped 599 bbls. of oil in 8 hours and made potential of 1,797 bbls.

G. W. Rose No. 1-A Hathaway, SE SE NW Section 34-19-10w, was a location.

Barton County

Cities Service Oil Co. No. 2 Bitter C, SW SW NE Section 18-16-13w, Trapp district, Barton County, pumped 429 bbls. of oil in 8 hours, earning daily potential rating of 1,286 bbls. Production was from Lansing lime at 3,113-38 feet, total depth.

Spencer & Yarnell No. 5 Patzner, SW SW SE Section 36-17-11w, was rigging up. Shell Petroleum Corp. No. 2 Bitter B, SW cor. Section 5-16-13w, South Trapp area, was building rotary rig.

McPherson County

Dickey Oil Co. No. 6 Decker, SW SW SE Section 35-19-2w, Ritz-Canton field, McPherson County, pumped 12 bbls. of oil and 3 bbls. of water daily and was completed in Mississippi lime at 2,920-63 feet, total depth.

Carey Drilling Co. No. 1-A Helstrom, NW NW NE Section 35-19-3w, Johnson area, failed to find production and was abandoned at total depth of 3,035 feet.

Ellis County

Three new operations in Ellis County were reported. Kerlyn Oil Co. No. 7 Rumsey, NE SE SW Section 23-11-17w, Bemis field, was a rig. Darby Petroleum Corp. No. 1 Peavey A, SE SE SW Section 13-11-18w, Peavy pool, was moving in material. Gulf Oil Corp. No. 1 Karlin, NW NE NW Section 13-12-18w, Walter area, was rigging up rotary.

Other First Reports

In Kingman County, Garden Production Co. No. 1 Joel, SW cor. Section 11-27-10w, Shepherd area, was a location.

In Butler County, Rex & Morris No. 2 Farmer, SW SW NW Section 8-28-7, was rigging up machine; Adair & Martin No. 7 Brandt, NE NE SE Section 15-28-7, was rigging up machine; Courtney B. Davis No. 1 Chinn, SE NW NW Section 24-28-7, was moving in material.

In Cowley County, Hartman & Blair No. 2 Waite, NE NE NW Section 21-31-4, was a location; Texas Co. No. 7 Hittle, SW NW SE Section 21-31-4, was a location.

In Stevens County, Stevens County Oil & Gas Co. No. 1 Brubaker, C NW Section 34-33-37w, was a location; same company's No. 1 Beavers, C NW Section 23 34-38w, was rigging up rotary.

California Fields

(Continued from Page 75)

yields a large producing well it will greatly stimulate drilling operations. No. 1 Cagle is more than one mile north of No. 2 Gatchell, the discovery well drilled by Petroleum Securities Co. in the northwest corner of Section 18-20-16, as the former is west of the center of the south line of Section 6-20-16. Location for three offsets have been staked and actual work will be started as soon as No. 1 Cagle is completed. R. S. Lytle, operating trustee for stockholders of Petroleum Securities Co., Honolulu Oil Corp. and Seaboard Oil Corp. in this area, has staked location for No. 15-7-F, a south line offset of No. 1 Cagle, and Superior Oil Co. has staked locations for Nos. 3 and 4 along the north line of Section 7-20-16. The Texas Co. owns the southeast quarter of Section 6-20-16 in fee, and will undoubtedly start at least one well on this 160 acres if No. 1 Cagle shows commercial production. No dry holes have yet been drilled in the north, south or east and so the outer limits of production have not been defined in those directions. The limits to the west have been fairly well established and Tide Water Associated Oil Co. No. 33 Guardian marks the limit of production to the northwest. Completion of No. 1 Cagle will mean that a minimum of 800 acres can be considered as commercially productive in this prolific field. This outpost is bottomed at 7,142 feet and has an 8⅝-inch water string cemented at 7,126 feet. Amerada Petroleum Corp. has completed derrick for No. 7-17 S.P.L. to be drilled in Section 17-19-16, about four miles north of Superior Oil Co. No. 1 Cagle and two and one-half miles southwest of Tide Water Associated Oil Co. No. 1 Fleishhacker, which was drilled and abandoned as a duster in Section 1-19-15. Amerada is drilling this wildcat in the expectation of finding an oil accumulation in the Gatchell sand against the old Eocene shoreline as has been the case in the Southeast Coalinga field.

West Montebello

Union Oil Co. centered the attention of operators on the eastern end of the western extension of the Montebello field this week by finding the fourth finger of the sixth zone highly productive on a formation test in No. 1 Calkins, with bottom of the hole at 6,686 feet. With the tester set at 6,625 feet and open 25 minutes this 61-foot interval showed gas at the surface in one minute; fluid in six minutes, and oil in seven minutes, accompanied by a very strong blow of gas. Flow samples showed a cut of 1.1 per cent mud, and on pulling out the crew recovered 565 feet of oil and 11 feet of "sweet" water. The performance of this well indicates a probable minimum production of 1,500 bbls. per day. Instead of running in a liner, an 8⅝-inch water string having been previously landed at 6,334 feet, the company decided to drill ahead and ascertain the thickness of the zone found. The bit in this hole late in the week had reached a depth of 6,788 feet, with no change in formation.

Union Oil Co. will probably continue drilling ahead to test the seventh zone found several months ago by Hathaway Oil Co. out on the southwest end of the structure. No. 1 Calkins is the most southeasterly well drilling in the area and its log should prove of value in correlation work in connection with the drilling of La Merced, which Union is drilling northeast of No. 1 Calkins and within the older section of the Montebello field.

West Montebello Oil Co. recompleted No 2 Montebello, flowing 950 bbls of 36.3 gravity oil cutting 4 per cent and 1,000,000 feet of natural gas, after the hole had been deepened to the fourth finger of the sixth zone with bottom of the hole at 6,690 feet.

Fruitvale

Western Gulf Oil Co., discoverer of the Fruitvale field of Kern County, extended the proved limits of the field approximately 750 feet by completing No. 1 Ansolabehere, pumping 274 bbls. of 18.9 gravity oil per day from a depth of 2,914 feet. This new well, which has an elevation of 437 feet, was finished with an 8⅝-inch water string landed at 2,886 feet and 88 feet of 6⅝-inch liner carrying perforations at 2,826-914 feet. Top of the pay was logged at 2,886 feet and the completion of this outpost in Section 14-29-27 proves up several additional locations. No. 1 Ansolabehere was drilled as an offset obligation and while some production was secured the well's initial exceeded the most sanguine expectations in as much as it is located out in the northwestern end of the field. In the southern end of the field Western Gulf Oil Co. is drilling ahead in No. 41-B Kern County Land in Section 22-29-27, in oil sand at 3,740 feet and should have it ready for a production test within another week. In Section 27-29-27 Pacific Southwest Oil Co. is making preparations to spud in No. 1 Dillon, which has an elevation of 395 feet. This field is within a short distance of the center of Bakersfield in Kern County and has been producing its quota for several years past. Peak production was reached within a short time after its discovery but drilling operations have continued over a period of years as Western Gulf Oil Co. originally drilled up its line wells first in order to prevent drainage.

Harbor City

In the Harbor City area, Texas Co. completed No. 2 Oakley, flowing 288 bbls. of 29.1 gravity oil cutting 5 per cent, from 5,240 feet, after the hole had been carried down to 6,109 feet and then plugged back to the completion depth. No. 2 Oakley was finished with a 7-inch water string cemented at 5,132 feet and 136 feet of 5¾-inch liner, including 87 feet of 80-mesh perforations landed at 5,240 feet. A. N. Macrate No. 2 Kupfer, at Lomita and Doble streets, was completed flowing 135 bbls. of 29.4 gravity oil cutting 7 per cent through a twenty-six sixty-fourths inch bean with bottom of the hole at 5,246 feet.

Torrance

Pacific Western Oil Co. No. 11 fee, section of the Torrance field, was brought in pumping 218 bbls. of 29.1 gravity oil, cutting 3 per cent from the Del Amo zone with bottom of the hole at 4,952 feet. Hart Petroleum Co. completed No. 1 Nehr flowing 165 bbls. of clean 25.4 gravity oil per day from the lower Del Amo zone at 5,127 feet. Paso Oil Co. No. 1 Lytle was good for 130 bbls. of 27.9 gravity oil, cutting 5 per cent from 4,951 feet and the crew from this well was immediately moved to No. 2 Lytle. This well was finished with a solid string of 7-inch landed on bottom and then subsequently perforated at preselected points. The Esheiman section of the Torrance field, east of the original Lomita district, is still the most active section and has been yielding the most satisfactory wells during the past 30 days.

Wilmington

Wilmington operators in a commendable effort to enhance curtailment have agreed to refrain from exploiting the Ford zone in the Long Beach Harbor section of the Wilmington field during 1939. A similar agreement prevailed during 1938 and no wells were drilled into the Ford zone in the east end of the field. Several Ford zone wells were drilled west of the Ford area but the results were rather unsatisfactory and this had a tendency to retard aggressive exploitation. Signal Oil & Gas Co. is, however, completing preparations to begin development of tideland acreage in the Long Beach Harbor section of the Wilmington field and should start derrick construction for the first of a total of 75 wells to be drilled. This operator is in sympathy with curtailment and all wells completed will be beaned back to conform with the established maximum.

General Petroleum Corp. No. 33 Harbor Community was the largest well finished in Wilmington last week as it showed an initial daily production of 1,008 bbls.

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TOTAL TANKER SHIPMENTS FROM CALIFORNIA TO DOMESTIC AND FOREIGN PORTS

	January 7		December 31			
Intercoastal-domestic—	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Fuel oil	61,980	8,854	137,878	19,697	61,980	.....
Diesel and gas oil	91,133	13,019	.....	.....	91,133	.....
Gasoline	.....	.....	52,886	7,555	.....	.....
Foreign exports—						
Crude oil	151,597	21,657	337,560	48,223	151,597	123,496
Fuel oil	125,341	17,906	142,731	20,390	125,341	.....
Diesel and gas oil	100,570	14,367	415,840	59,406	100,570	82,125
Gasoline	92,306	13,187	557,400	79,629	92,306	79,846
Kerosene	.....	.....	26,196	3,742	.....	108,510
Lubricants	.....	.....	46,036	6,577	.....	.....
Coastwise-domestic—						
Crude oil	306,561	43,794	110,608	15,801	306,561	139,042
Fuel oil	333,660	49,094	591,650	84,521	333,660	575,312
Diesel and gas oil	59,641	8,520	192,001	27,429	59,641	83,205
Gasoline	320,474	45,782	629,081	89,869	320,474	631,682
Kerosene	45,182	6,455	20,855	2,979	45,182	24,846

Rocky Mountain Area

By
T. R. INGRAM

Wildcat in Lovington Area Opens New Mexico Oil Pool

DENVER, Colo., Jan. 16.—The Plymouth Oil Co. deep test in the Denver basin, Elbert County, Colorado, was unable to recover drill pipe and was abandoned at 7,585 feet. Colorado oil men are heading a movement to obtain a revision of the oil leasing act affecting government land. Stanolind Oil & Gas Co. No. 35-SD Parkinson, in the Iles field, was recompleted for 15 bbls. an hour in the Sundance.

The Wyoming Public Service Commission has filed a petition with the Federal Power Commission seeking a revision of rates on natural gas from Texas similar to petition recently filed by the city and county of Denver. Lincoln Oil & Gas Co. No. 3 Tribal, in the Plunkett field, was completed for 13 bbls. Department of the Interior officials heard testimony January 10 at Washington on Salt Creek unitization plan. The California Co. is expected to become a purchaser of Lance Creek crude shortly for processing in a Denver refinery. There were no completions in Lance Creek. Stanolind Oil & Gas Co. No. 18 Elk-5, in Elk basin, was dry and abandoned. Osage had one small well and one dry hole. Wyoming had three new operations.

Kevin-Sunburst, in Montana, had a flowing well in Fulton-Commonwealth No. 1 Thompson, which made 100 bbls. a day after acidizing. One other completion was a small well. Cut Bank had one small oil well in K. D. Pardee No. 3 Tribal, and a gas well in Glacier Production No. 1 Gilliard unit. One new operation in Cut Bank got under way.

Petroleum Products Corp. completed a 150-bbl. well on the Hospah dome, McKinley County, New Mexico.

NEW MEXICO

A new oil pool has been opened in the Lovington area, Lea County, New Mexico, at Skelly Oil Co. No. 1-N State, C NW NE Section 36-16-36, wildcat 2 miles north of the recent gas discovery in the district. After being drilled to total depth of 5,012 feet, the well showed a small amount of oil and gas but swabbed dry through 2½-inch tubing set at 5,010 feet. It was acidized with 2,000 gallons and then swabbed 41 bbls. of oil in three hours after recovering oil load. It was given a second acid treatment of 5,000 gallons and flowed 102 bbls. of oil in 20 hours after running swab. On last gauge before being shut in it swabbed and flowed 131 bbls. of fluid, 86 per cent oil and 14 per cent basic sediment in 18 hours, with gas estimated at 200,000 feet daily. It was shut in to build up pressure in an effort to make it flow. When shut in, casing pressure was 160 pounds and it had built up to 610 pounds at the end of 54 hours. Best pay was found at 4,675-95 feet, but it also had oil stains and porous cuttings at 4,900-25 feet and 4,950-75 feet, with more stains from that point to total depth.

The Lovington area was proven for gas production several weeks ago at Westmount Oil Co. No. 1 Amerada-State, C NW NE Section 12-17-36e. A second producer for that immediate area was indicated at Amerada Petroleum Corp. No. 1-LA State, C SE SW Section 1-17-36, northwest offset to the Westmount discovery. It found first oil stains and porosity at 4,664-4,730 feet, with best pay at 4,700-10 feet. Slight porosity and stains also were evident at 4,730-52 feet and 4,760-72 feet. It was bottomed at 4,815 feet in lime and the crew was preparing to run 5½-inch casing.

The Vacuum area in Lea County continues to pace other New Mexico pools, four producers and a failure being recorded in that sector the past week. The Monument area was extended slightly to the west and three producers were completed elsewhere in Lea County. A wildcat failure was recorded in Eddy County.

Lea County completions:

George F. Getty No. 4-F State, C NE NW Section 36-17s-34e, Vacuum pool, was completed for 1,356 bbls. of oil daily from pay at 4,200 feet. The flow was natural and through open 2-inch tubing set at 4,699 feet. Total depth was 4,700 feet.

Amerada Petroleum Corp. No. 7 Andrews, C E half NE NW Section 23-20s-36e, topped pay at 3,807 feet, total depth 3,884 feet, and flowed 44 bbls. of oil hourly through choke in three-hour test, with 620,000 feet of gas. The well was acidized with 2,000 gallons. It extended the Monument field slightly westward.

Continental Oil Co. No. 6 Lockhart A-18, C E half NW SW Section 18-21s-36e, Eunice field, topped pay at 3,835 feet and after shooting at 3,830-91 feet flowed 22 bbls. of oil per hour. Gas gauged 2,420,000 feet daily. Total depth was 3,891 feet.

J. M. Rush No. 1 Weatherly, C SW NW Section 21-21s-37e, Hardy area, flowed 60 bbls. of oil in 14 hours with gas gauging 2,300,000 feet per day. Top of pay was 3,720 feet, total depth 3.790 feet.

Ohio Oil Co. No. 1 Saunders, C NE NW Section 1-22s-36e, total depth 3,830 feet, flowed 39 bbls. of oil hourly, with 1,200,000 feet of gas, from pay found at 3,728 feet.

Westmount Oil Co. No. 1 State, C SE NW Section 30-17s-35e, Vacuum pool, found pay at 4,546 feet, total depth 4,728 feet, and flowed 59 bbls. of oil in 24 hours after acidizing.

Standard Oil Co. of Texas No. 1 State, Lease 6, C NW SW Section 34-17s-35e, Vacuum field, had pay at 4,365 feet, was bottomed at 4,633 feet and flowed 130 bbls. of oil in a three-hour test.

Magnolia Petroleum Co. No. 3-M State, C SW NW Section 34-17s-35e, total depth of 4,683 feet, topped pay at 4,440 feet and flowed 480 bbls. of oil in a little less than six hours, naturally, through open tubing.

Continental Oil Co. No. 3 Lockhart B-1, C NW SE Section 1-22s-36e, flowed 60 bbls. of oil in eight hours through three-quarters inch choke on 2-inch tubing set at 3,796 feet, with 324,000 feet of gas. Total depth was 3.802 feet, top of pay 3,730 feet.

Shell Petroleum Co. No. 1-I State, C SW NW Section 29-17s-35e, was dry and abandoned at 4,753 feet, total depth.

In Eddy County, C. J. Frederick No. 1 Reed, C NE SW Section 28-24s-28e, in sand at 2,770 feet and was dry and abandoned. Wildcat near Malaga in southern Eddy County was dry and abandoned at 2,770 feet, total depth, in sand.

Lea County

Barnsdall Oil Co. No. 1 Humble-State, C NE SE Sec. 33-16-36. S.D.O. 4,997 ft.
Repollo Oil Co. No. 1 State, Lease 182, C S½ SE SW Sec. 31-16-37. Drlg. 3,915 ft.
Skelly Oil Co. No. 1-N State, C NW NE Sec. 36-16s-36. T.D. 5,012 ft.; retreated and F. and swb. 131 B.O. in 18 hrs.
Amerada Pet. Corp. No. 1-LA State, C SE SW Sec. 1-17-36. Drlg. 4,658 ft.
Continental Oil Co. No. 1-A Sanderson B-14, C N½ NW NW Sec. 14-20-36. W.O.C. 1,443 ft.
Continental Oil Co. No. 1 State H-34, C SE SE Sec. 34-17-34. W.O.C. 285 ft.
Continental Oil Co. No. 4 State H-35, C SE NW Sec. 35-17-34. Drlg. 3,847 ft.
Continental Oil Co. No. 5 State H-35, C SW NE Sec. 35-17-34. Loc.
Drilling & Exploration Co. No. 1-B State, C S½ SE NW Sec. 22-17-35. Rng. csg. 4,690 ft.
Humble O. & R. Co. No. 2-J State, C NW SW Sec. 19-17-35. Drlg. 3,970 ft.
Humble O. & R. Co. No. 1-K State, C SE SE Sec. 28-17-35. R.U.R.
Humble O. & R. Co. No. 2-K State, C NW NE Sec. 32-17-35. Drk.
Magnolia Pet. Co. No. 4-M State, C SE NW, Sec. 34-17-35. Drlg. 1,038 ft.
Magnolia Pet. Co. No. 2-J State, C NW SE Sec. 22-17-34. Drk.
Magnolia Pet. Co. No. 22 State-Bridges, C SE SW Sec. 24-17-34. Drlg. 4,270 ft.
Magnolia Pet. Co. No. 23 State-Bridges, C NW SW Sec. 24-17-34. Drlg. 2,910 ft.
Magnolia Pet. Co. No. 24 State-Bridges, C SW SW Sec. 13-17-34. Drlg. 1,016 ft.
Maljamar O. & G. Co. No. 1-B Baish, C NE NW Sec. 22-17-32. T.D. 4,157 ft.; P.B. 3,527 ft. and S.D.
Maljamar O. & G. Co. No. 2-B Baish, C NE NE Sec. 27-17-32. Loc.
Maljamar O. & G. Co. No. 1-B Mitchell, C NE SE Sec. 20-17-32. T.D. 3,591 ft.; W.O.S.T.
Maljamar O. & G. Co. No. 6 Mitchell, C SW NE Sec. 20-17-32. T.D. 3,600 ft.; W.O.S.T.
Maljamar O. & G. Co. No. 1-B State, C SW SE Sec. 16-17-32. T.D. 4,125 ft.; P.B. 4.115 ft.; tstg.
Ohio Oil Co. No. 4 State-McCallister, C NW SW Sec. 25-17-34. Drlg. 3,475 ft.
Ohio Oil Co. No. 2 State-Staplin, C NE SW Sec. 30-17-35. C.&P.
Phillips Pet. Co. No. 12 Santa Fe, C NE SW Sec. 28-17-35. T.D. 4,700 ft.; C.O. at 4,632 ft.
Phillips Pet. Co. No. 13 Santa Fe, C NW NW Sec. 28-17-35. T.D. 4,695 ft.; retreated and swbg.
Phillips Pet. Co. No. 15 Santa Fe, C NE NE Sec. 28-17-35. T.D. 4,700 ft.; C.O. 4,618 ft.
Phillips Pet. Co. No. 18 Santa Fe, C NW NE Sec. 34-17-35. Drlg. 3,702 ft.
Phillips Pet. Co. No. 19 Santa Fe, C NW NE Sec. 35-17-35. T.D. 4,780 ft.; P.B. 4,687 ft.; pulled tbg. and shot.
Phillips Pet. Co. No. 20 Santa Fe, C SW SW Sec. 27-17-35. C.&P.
Phillips Pet. Co. No. 21 Santa Fe, C NE NE Sec. 33-17-35. Loc.
Phillips Pet. Co. No. 22 Santa Fe, C NW SW Sec. 26-17-35. Drlg. 3,840 ft.
Repollo Oil Co. No. 2 State, Lse. 197, SE NE SE Sec. 6-17-34. Drlg. 781 ft.
Shell Pet. Corp. No. 1-C State, C NE SE Sec. 24-17-34. Drlg. 4,020 ft.
Shell Pet. Corp. No. 1-S State, C NE SE Sec. 21-17-35. T.D. 4,745 ft.; pump 30 B.O.P.D.
Shell Pet. Corp. No. 1-V State, C NE SE Sec. 21-17-35. Rng. tbg. 4,680 ft.
Shell Pet. Corp. No. 2-V State, C SE SE Sec. 27-17-35. Drlg. 3,835 ft.
Standard Oil Co. of Texas No. 2 State, Lse. 3, C NW NW Sec. 32-17-35. Drlg. 4,440 ft.
Standard Oil Co. of Texas No. 4 State, Lse. 4, C NW SW Sec. 27-17-35. Drlg. 1,522 ft.
Stanolind O. & G. Co. No. 1 State, C SW SE Sec. 1-17-36. Drlg. 4,777 ft.
Texas Co. No. 1-T State, C SE NE Sec. 25-17-34. T.D. 4,725 ft.; swb. 46 B.O. in 24 hrs.; S.D.O.
Twin Oil Corp. No. 1-D State, C SW NE Sec. 30-17-35. T.D. 4,700 ft.; acdz. and F.&S. 60 B.O. in 12 hrs.
Fullerton Oil Co. No. 1-A Walker, C SW NW Sec. 18-18-32. Drlg. 530 ft.
Phillips Pet. Co. No. 16 Santa Fe, C NW SW Sec. 5-18-35. T.D. 4,750 ft.; shot and C.O. 4,649 ft.
Texas Co. No. 3-R State, C SE NE Sec. 6-18-35. T.D. 4,710 ft.; swb. 43 B.O. in 8 hrs.
Shell Pet. Corp. No. 2 Foster, SE SW SE Sec. 34-19-36. Drlg. 1,680 ft.
Continental Oil Co. No. 1-A Sanderson, CN½ NW NW Sec. 14-20-36. Drlg. 3,750 ft.
J. M. Rush No. 3 State A-20, NW SW SE Sec. 20-20-37. Drlg. 3,611 ft.
J. M. Rush No. 4 State A-20, NW SE SE Sec. 20-20-37. Loc.
Texas Co. No. 16 Lieu-Lands, C NE SW Sec. 20-20-37 Drk.
Aloco Oil Co. No. 1 Carson, C SW SE Sec. 28-21-37. T.D. 3,560 ft.; P.B. 3,507 ft.; W.O.C.
Cities Service No. 1-M State, C SW SW Sec. 36-21-36. Drlg. 3,105 ft.
Magnolia Pet. Co. No. 1 Marshall, C SW NW, Sec. 34-21-37. R.U.R.
Francis C. Wilson No. 3 State, NW SE NE Sec. 7-21-35. Drlg. 3,504 ft.
J. C. Clower No. 1-B Manda, NE NE NW Sec. 28-22-37. T.D. 3,681 ft.; C.O. 3,570 ft.
Danglade & Clower No. 1-B Glier, C SE NW Sec. 33-22-37. Drlg. 1,280 ft.
Continental Oil Co. No. 4 State J-2, C NE NE Sec. 2-22-36. Drlg. 3,010 ft.
Continental Oil Co. No. 5 State J-2, C SE SE Sec. 2-22-36. Loc.
Devonian Oil Co. No. 2 Christmas, SE SW SE Sec. 28-22-37. Loc.
Olean Pet. Co. No. 2 Brunson, SW NE SE Sec. 4-22-37. T.D. 3,742 ft.; F. 205 B.O. in 24 hrs.; est. 2,000,000 ft. gas.
Olean Pet. Co. No. 2 Farrell, SW SE SE Sec. 22-22-37. Drlg. 3,310 ft.
Texas Co. No. 2-B Fally, C SE SW Sec. 8-22-37. C.&P.
Texas Pacific Coal & Oil No. 13-A State, C NE NE Sec. 11-22-36. Loc.
Twin Oil Co. No. 1-C State, C SE NE Sec. 17-22-37. Drlg. 3,486 ft.
Two States Oil Co. No. 3-B Cole, C NE NW Sec. 16-22-37. Drlg. 2,780 ft.
Walter Donnelly No. 1 Davis, C SE NW Sec. 33-23-37. T.D. 3,600 ft.; F. 12 B.O.P.D.; W.O.C.O. unit.
Great Western Prod. No. 2-B Leonard, C NW NW Sec. 32-23-37. Loc.
R. Olson No. 1 Blinebry, C SW SW Sec. 29-23-37. C.&P.
Montecito Oil Corp. No. 1 Woolworth, NE SE SW Sec. 33-24-37. T.D. 3,545 ft.; F. 150 B.O.P.D.
North Shore Corp. No. 1 Woolworth, NE NE NW Sec. 33-24-37. Drlg. 892 ft.
North Shore Crop. No. 2 Woolworth, SE SE NW Sec. 33-24-37. Drlg. 505 ft.
Parker Drlg. Co. No. 3 Erwin, C W½ NE SW Sec. 35-24-37. Drlg. 3,455 ft.
Phillips and Pure No. 4 Woolworth, C NW SE Sec. 33-24-37. Drlg. 2,835 ft.
Repollo Oil Co. No. 1 State, 157-C, SW SW SE Sec. 32-24-37. T.D. 3,545 ft.; rng. tbg.; F. est. 100 B.O.P.D.
Schermerhorn Oil Co. No. 4 Woolworth, C NE SE Sec. 28-24-37. Drlg. 2,000 ft.

Schermerhorn Oil Co. No. 5 Woolworth, NW SW NE Sec. 28-24-37. R.U.S.T. (cor.).
Texas Co. No. 4 Black, C SE NW Sec. 21-24-37. T.D. 3,565 ft.; C.O.&F. 30-50 B.O.P.D.; rng. tbg.
Sam Weiner No. 2 Woolworth, SW NW SW Sec. 33-24-37. Drlg. 410 ft.
Weir Drlg. Co. No. 3 Woolworth, NE SW SW Sec. 28-24-37. R.U.S.T.
Culbertson & Erwin No. 2 Henry, SW SE SW Sec. 26-25-37. S.D. repairs 3,116 ft.
Geo. F. Getty No. 1-G State, NW NW NW Sec. 2-25-37. Drlg. 3,447 ft.; F. by heads.
Gulf Oil Corp. No. 5 Stuart, C NE NE Sec. 10-25-37. T.D. 3,435 ft.; S.D repairs.
Gulf Oil Corp. No. 6 Stuart, C NW NW Sec. 11-25-37. R.U.R.
Italo Pet. Corp. No. 1 Carlson A-23, NW NW SW Sec. 23-25-37. T.D. 3,345 ft.; tstg.; F. by heads.
Italo Pet. Corp. No. 1 Carlson B-27, NE NW NE Sec. 27-25-37. T.D. 3,364 ft.; P.B. 3,354 ft.; C.O. 3,322 ft.
Italo Pet. Corp. No. 1 Indian Pet. Corp., NE NE NE Sec. 6-25-37. W.O.C. 3,380 ft.
Italo Pet. Corp. No. 1 Indian Pet. Corp. B-5, NW NE NE Sec. 5-25-37. Drk.
Richmond Drlg. Co. No. 1-A State, C NW SW Sec. 2-25-37. T.D. 3,338 ft.; drlg. by lost bit.
Richmond Drlg. Co. No. 2-A State, C SW SW Sec. 2-25-37. C.&P.
Sam Weiner No. 3 Smith, C N½ NE SE Sec. 4-25-37. Drlg. 3,115 ft.

Eddy County

Carper Drlg. Co. No. 3 Robinson, SW SW SE Sec. 25-16-31. T.D. 4,040 ft.; ran 2-in. 3,811 ft.; swbg.
Dominion O. & G. Co. No. 3 Johnson, C NE SW Sec. 35-16-31. T.D. 3,950 ft.; fsg. bit.
Fullerton Oil Co. No. 4-A Johnson, C SW NW Sec. 35-16-31. Drlg. 3,847 ft.
Danciger O. & R. Co. No. 1-B Turner, CEL NE SE Sec. 17-17-31. T.D. 3,530 ft.; tstg.
Hammond & Sons No. 1 Ployhar-State, SW SW SE Sec. 16-17-28. Drlg 550 ft.
J. O. and J. H. Hammond No. 1 Paris, NE NW NW Sec. 5-17-29. S.D.O. 25 ft.
English & Harmon No. 1 Stogner, C NW SE Sec. 31-17-31. Drlg. 3,470 ft., sd.; S.S.O.
P. B. English No. 1 Saunders, SE SE SE Sec. 13-17-27. T.D. 460 ft.; W.O.C.
Etz Bros. No. 5 State, SE NE SE Sec. 16-17-30. Drlg 3,256 ft.; swb. 40 B.O.P.D.
Flint Prod. Co. No. 1-L Dexter, SE NW SE Sec. 15-17-30. Drlg. 2,740 ft.
F. G. Keyes No. 3 Red Gulch, NW NW NE Sec. 16-17-28. Drlg. 925 ft.
Ohio Oil Co. No. 4 State-McCallister, Sec. 25-17-34. W.O.C. 510 ft.
C. S. Powell No. 1 Smith, NW NW NE Sec. 6-17-29. Drlg. 1,525 ft.
Red Lake Oil Co. No. 3 Stephens, C NE SE Sec. 20-17-28. M.I. spudder.
H. J. Steinberger No. 1 Hastie, SE NE SW Sec. 18-17-28. T.D. 182 ft.; S.D. repairs.
Adkinson Oil Co. No 1 Brainard, SE SW SE Sec. 5-18-27. T.D. 1,250 ft.; tstg.
Farmer & Tallmadge No. 1 Hubbell, NE SW Sec. 4-18-25. S.D.O. 380 ft.
Franklin Pet. Corp. No. 1 Ballard, NE NE SE Sec. 1-18-29. Loc.
Green Bay Oil Co. No. 1-A Johnson, C SE SE Sec. 11-18-31. R.U. machine.
Paton Bros. No. 1 Erwin, C SE SE Sec. 5-18-31. Drlg. 3,170 ft.
Rhodes Drlg. Co. No. 1 Swearingan, NE SE NW Sec. 14-18-31. T.D. 3,475 ft.; shot and prep. to pump.
Worth Drlg. Co. No. 1 Taylor, C SW SW Sec. 12-18-31. T.D. 3,600 ft.; F. 42 B.O.P.D.; tstg.
Yates et al No. 1 Yates, C NW SW Sec. 6-18-30. Drlg. 2,852 ft.; swb. 110 B.O.P.D.
Harvey E. Yates No. 1 Travis, NE SE SE Sec. 6-18-29. W.O.C. 345 ft.
G. E. Quillen No. 1 Puryear, C NW NE Sec. 12-19-31. R.U. machine.
Geo. E. Robb No. 1 Cannon, C SW SE Sec. 4-19-30. Drlg. 200 ft.; last report.
Geo. E. Robb No. 1 Vandagriff, SW NE Sec. 6-19-31. T.D 800 ft.; S.D.O.
R. C. Underwood No. 1 Quillen-Bruce, NE NE SE Sec. 4-19-31. S.D. repairs 725 ft.
Martin Yates, Jr., No. 1 Bowers, SW SE SE Sec. 31-19-27. T.D. 1,180 ft.; est. 25-40 B.O.P.D.; tstg.
Trojan Oil Co. No. 1 Grant, SW SW NE Sec. 33-20s-25e. S.D.O. 408 ft.
C. F. Ingram No. 1 Page, NE NE SW Sec. 15-21-28. T.D. 2,978 ft.; fsg.
Barnett Oil Dev. Co. No. 1 King, C NW SE Sec. 23-26-30. T.D. 1,100 ft.; C.O.

Chaves County

Nay Hightower No. 1 Billingslea, C SW NE Sec. 28-11-30. T.D. 770 ft.; S.D. for csg.
E. J. Fisher No. 1 Foster, C NW NW Sec. 7-15-26. T.D. 1,281 ft.; S.D.O.

De Baca County

N. E. Woods No. 1 Jones, C NE SW Sec. 17-4n-20. T.D. 190 ft.; S.D.O.
James D. Ward No. 1 Summers, SE NE SW Sec. 15-4n-24e. T.D. 680 ft.; S.D.O.

Roosevelt County

Shell Pet. Corp. No. 1 Harwood, C S½ SE SE Sec. 27-7s-35e. T.D. 5,151 ft.; P.B. 4,600 ft.; S.D.O.

NORTHWEST NEW MEXICO

Bernalillo County

Norins Realty Co., Inc., No. 2 Pajarito, Sec. 22-9n-1e. Drlg. below 1,000 ft.
Norins Realty Co., Inc., No. 2 North Albuquerque, NE SE NW Sec. 10-11n-4e. S.D. 4,450 ft.

McKinley County

Petroleum Products Corp. No. 5 Santa Fe, SE NW NE Section 1-17n-9w, Hospah pool, was completed at 1,604 feet for 150 bbls. per day, estimated.

S. Dysart No. 3-A Govt., NE NW NE Sec. 14-14n-10w. Cmtd. 12½-in. 1,320 ft.; 100 ft. sat.
Pet. Products Co. No. 3 Santa Fe, NE NW Sec. 1-17n-9w. Drlg. 1,500 ft.

Rio Arriba County

Oil City Pet. Co. No. 2 Wirt-Sanchez, C Sec. 12-31-2e. M.I.

San Juan County

Continental Oil Co. No. 85-A Rattlesnake, CEL SW NE Sec. 2-29-19w. T.D. 823 ft.; cmtd. 5-in. on bttm.

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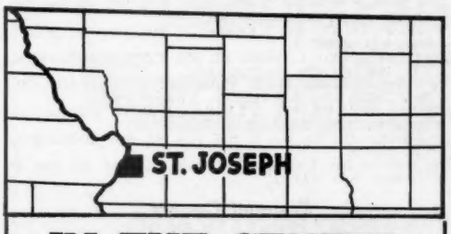

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San Juan O. & G. Co. No. 2 Cassidy, NW NW SW Sec. 18-29n-11w. Drlg. 400 ft.
Kutz Deep Test, inc., No. 1 Govt., C NW NW Sec. 28-28n-10w. Drlg. 300 ft.
Jack Amenda No. 1, NE NE Sec. 14-29n-13w. Drlg. 625 ft.
Al Greer No. 2 fee, SW SE SW Sec. 10-30-11w. Drlg. bl. sh. 830 ft.
Anna Oil Corp. No. 6 Govt., SW NE NE Sec. 33-30n-11w. S.D. 1,885 ft.; W.O. csg.; S.O. in Farmington sd. but will D.D. to Picture Cliff.
Goodrun & Vincent No. 1 Seitzinger, SW SE NE Sec. 23-29n-11w. Spdg. 50 ft.
Ted Whetstine No. 1 McGee, NW NW Sec. 20-30n-11w. S.D. 434 ft. for mat.
Bullock & Noland No. 1 Bunce. SW SE Sec. 24-29n-1w. Drlg. 1,023 ft.

Valencia County

Joiner Oil Corp. No. 1 San Clemente, C NE SE Section 23-7n-1e. Cmtd. 10-in. at 600 ft.

COLORADO

Archuleta County

Boone Dev. Co. No. 1 Newton, SE NW SE Sec. 18-33n-1e. Drlg. sh. 735 ft.
Pagosa Oil & Dev. Co. No. 1 Macht, C Sec. 32-36-1w. T.D. 2,460 ft.; fsg. tools; through Dakota series.
Axelind Oil Co. No. 1 Sec. 11-32n-2e. Drlg. below 700 ft.

Boulder County

Reynolds & Reher No. 1 Thomas, SW SW Sec. 17-1n-70w. T.D. 300 ft.; U.R. csg. for W.S.O.

Douglas County

A recent report regarding the blocking up of 55,000 acres in T. 8 and 9 S., R. 66 and 67 W., in Douglas County, is incorrect so far as reporting that leasing was done by the Independent Exploration Co. is concerned. That company, it is stated, does no leasing. The land was leased first hand by Trinity Oil Co. through Clayton Smith, its land man, on the strength of geophysical findings by the Independent company, which made a geophysical survey of the area.

Elbert County

Plymouth Oil Co. No. 1 Brosky-Union Pacific, C SW SW Section 19-10s-60w, Ramah district, was plugged and abandoned at 7,578 feet when the drillers were unable to recover the drill pipe which had dropped in the hole. The log of the well has not yet been released, but it is believed the hole was bottomed in the upper Pennsylvania when abandoned. Several shows of oil were encountered and it was planned to test these before finally abandoning the hole. These, however, were of doubtful commercial value. Future plans have not been announced, but it is reported at least one more well will be drilled on the Rich block, but by what company is not stated.

Fremont County

Stanley Thomas No. 1 Rickwalt, SE SE Sec. 2-19s-70w. S.D. 2,460 ft.

Garfield County

Roaring Fork Oil Co. No. 1 Patterson, C NE Sec. 36-7s-88w. S.D. 2,008 ft. for winter after W.S.O. with 5⅛-in. at 1,757 ft.

Huerfano County

J. W. Tomkins & Sons No. 2 Presser, SE SE SE Sec. 3-29s-69w. Drlg. 204 ft.

La Plata County

N. Spatter No. 1-X Bryce, SE SW SW Sec. 31-33n-9w. T.D. 2,250 ft.; U.R. 8¼-in. at 2,100 ft.; slow progress due to heavy gas pressure.

Las Animas County

Hulme-Johnston-Allison No. 1 Azar, SE SE NW Sec. 27-34s-58w. T.D. 6,275 ft.; W.O. new drlg. line.

Logan County

West Plains Dev. Co. No. 1 Sheldon, SE NW SE Sec. 3-10s-55w. Spdg. delayed by weather.

Moffat County

Stanolind Oil & Gas Co. No. 35-SD Parkinson, SE SE NE Section 22-4n-92w, an old well on the Iles dome deepened from 3,381 feet, was recompleted at 3,431 feet after plugging back from 3,483 feet for 15 bbls. per hour from the Sundance. The 5½-inch liner was cemented on bottom and perforated. It was originally completed in the upper Sundance in 1935 for 1,440 bbls.

Isenberg-Parker-Myers No. 1 Myers-State on the Willow Creek structure is at a critical depth at 960 feet. It had a show of free oil in the top of the Webber (Tensleep) at 780 feet, followed by a small quantity of water. The water rose 600 feet while shut down for a week. Below present bottom there are several shale and limestone breaks in the formation which may form a trap for the oil. It is drilling ahead.

Isenberg-Parker-Myers No. 1 Myers-State, NW SE NE Sec. 36-4n-103w. Drlg. 960 ft.
C. R. Privett No. 1 Sutton, NE NE SW Sec. 1-5n-96w. T.D. 1,145 ft.; U.R. 8¼-in. to top of sd. in Dakota.
MacKinnie Oil & Drlg. Co. No. 1 Coles, SW SW SE Sec. 1-3n-92w. S.D. 3,050 ft.; M.I. 6¼-in.

Montezuma County

McElmo Oil Co. No. 1 West, NE NW NW Sec. 31-36s-17w. Drlg. 4,917 ft.

Park County

South Park Oil Co. No. 1 Lemar, NE NE SE Sec. 34-11s-75w. Drlg. 6,685 ft.: 200 ft. O.I.H.

Prowers County

Continental Oil Co. No. 1 Ruby, C NE NW Sec. 31-21s-44w. T.D. 5,437 ft. in White L.; R.U. to run 7-in.

Pueblo County

C. E. Puckett No. 1 Barber, NW Sec. 35-21s-66w. S.D. 870 ft. for csg.
Eden O. & G. Co. No. 1 Horse Creek, SW SE Sec. 29-19s-64w. Drlg. 2,035 ft.; will S.O.W. in Lakota and tst. Morrison.

Rio Blanco County

Buford Oil Co. No. 1 Govt., C SW SW Sec. 16-1n-91w. Cg. below 3,613 ft.

Routt County

Steamboat Springs Drlg. Synd. No. 1 Brown, C NW NE Sec. 1-6n-86w. S.D. 1,790 ft.

WYOMING

Big Horn County

John H. Thomas No. 1 Government, SW SW SE Section 3-54n-94w, Spence district, was abandoned at 800 feet (C.D.). It had water at 775-782 feet.

One new operation on the Crystal Creek structure was reported in Frank S. Scott No. 1 Robertson.

Frank S. Scott No. 1 Robertson, SE SE SE Sec. 6-54n-93w. Spd. to 14 ft. and S.D. to complete R.U. (first report.)
Libby-Keoughan Interests No. 1 Sheets-Govt., SE NE SE Sec. 9-55n-96w. Drlg. 2,600 ft.
A. L. Rankin No. 1 Karjajia-Rankin, C SW NW Sec. 10-54n-94w. S.D. 590 ft.
Prescott & Mileski No. 1 Govt., NE NW SW Sec. 15-1n-93w. S.D. 1,190 ft.; repairs.
Clifford S. Johnson No. 1 Johnson, CEL NW NW Sec. 24-51n-93w. Spdg.
Joan Oil Co. No. 1 Howell, NE NW NE Sec. 32-55n-97w. T.D. 2,718 ft.; will install rot. to go to Madison.

Campbell County

Fyre & Kreiner No. 2, CSL NW NW Sec. 6-50n-72w. Landed 5⅛-in. on bttm. at 823 ft. and S.D.

Carbon County

Sinclair-Wyoming Oil Co. No. 2-A Mahoney Unit, C SW NE Sec. 34-26n-88w. Loc.
Ohio Oil Co.-California Co. No. 7 Union Pacific-Johnson, CEL NE SW Sec. 23-21n-79w. Drlg. 4,965 ft.
Sinclair-Wyo. Oil Co. No. 4 Mahoney, CNL NE SW Sec. 34-28n-88w. T.D. 4,558 ft.; W. in base Tensleep; P.B. to 4,505; W.O.C.
Producers Oil Co. No. 1 Lake Valley, 200 ft. CNL Sec. 14-20n-88w. S.D. 1,916 ft.

Converse County

H. O. Emery, and others No. 2 Roberts, C SW SE Section 2-31n-70w, Shawnee district, was dry and abandoned at 254 feet.

Wyore Oil Co. No. 3 Gaspar, SW Sec. 25-32n-69w. Loc.
Chas. Wheeler et al No. 1 Fitzhugh, NW Sec. 19-31n-71w. S.D. 460 ft.
Jack Decker et al No. 1 Simonson, NW NE SE Sec. 16-32n-68w. S.D. 640 ft. for csg.
Wyshawn Oil Co. No. 2 Lindley, C SW SW Sec. 35-32n-69w. S.D. 2,392 ft.
Fred Bunker No. 1 Pestal, SE NE NE Sec. 32-32n-69w. T.D. 483 ft.; prep. to run csg.
New Era Fuel Co. No. 2 Mary Gaspar, CNL NW SW Sec. 25-32n-69w. S.D. 670 ft. without tstg.
Wyshawn Oil Co. No. 1 Lindley, NW SE SE Sec. 34-32n-69w. Drlg. 2,725 ft. in Bell (?) sd.
Blue Ridge Oil Co. No. 1, SW NW SE Sec. 29-32n-69w. S.D. 175 ft.
Dr. Harvey No. 1 Granville-Tinnin, NE NE SE Sec. 6-31n-69w. S.D. 275 ft.

Fremont County

Lincoln Oil & Gas Co. No. 3 Tribal, SW SW SE Section 23-1s-1e, Plunkett field, was completed in Mowry shale at 431 feet for 13 bbls. per day. It is a diagonal offset on the southeast to No. 2 Tribal, a dry hole.

Frank Pouppirt No. 1 Fidelity Tr., SW NE SW Sec. 27-3n-1w. S.D. 1,168 ft.
Tropic Oil Co. No. 1 Govt., C SE SW Sec. 34-27n-90w. S.D. 3,465 ft. in Lakota.
Consolidated Oil Properties No. 3 Ewart, C SW SE Sec. 16-1n-1w. S.D. 1,240 ft.
C. E. Nelson No. 8 fee, CWL NE SW Sec. 27-3n-1w. S.D. 1,200 ft.; S.O. 1,095 ft.
Frank Pouppirt No. 2, NW NW SW Sec. 27-3n-1w. S.D. 1,200 ft.

Lincoln County

Mazel Skofield No. 1 Government, CWL NE NE Section 32-19n-116w, Cumberland district, was unable to recover lost tools at 421 feet and hole was abandoned. It stopped in shale.

H. C. Harris et al No. 1 Govt., SE NW NW Sec. 23-21n-117w. T.D. 1,096 ft.; fsg. tools.

Natrona County

A hearing before executives of the Department of the Interior was held at Washington on January 10 on the unitization plan for the Salt Creek field. The plan as presented to the department last August was approved as to form. Several minor changes then were made and it was submitted to all operators with holdings in the proposed unit area. Approximately 90 per cent of the total signed the agreement after which it was presented to Secretary Ickes for his final approval. The hearing on January 10 was called to hear any objections to the provisions of the plan. No decision has been reported at this writing.

General Pet. Corp. No. 2 State, NW SE NE Sec. 16-35n-77w. Drlg.; foundations run.
General Pet. Corp. No. 1 State, NW NE SE Sec. 16-35n-77w. Drlg. 7,383 ft.; second Wall Creek sd. at 7,222-27 ft. Showed slight sat. in core.

Niobrara County

The California Co. will become a purchaser of Lance Creek crude at an early date if negotiations now pending are consummated. The company is making arrangements to buy crude from Ohio Oil Co. in that field, according to these reports, transport it through the new Rocky Mountain Pipe Line Co. line to Denver, and have it processed in the refinery of Bay Petroleum Corp. The Bay plant is operating on crude coming from Lance Creek and any deal made with the California Co. for processing its oil will not abridge that arrangement, it is stated, but merely will augment its runs. The Bay company receives its Lance Creek oil from Minnelusa Oil Corp. and its affiliates. Interests identified with the Bay company and the Minnelusa company own a minority interest in the pipe line company, and Continental Oil Co. owns the controlling interest. It is a common carrier and at present supplies the Continental and Bay refineries at Denver and the Bay plant at Cheyenne.

The deal will result not only in a larger market for Lance Creek oil, but will augment the available supply for the needs of the California Co. which last fall became one of the major distributors in this region through a deal with Navy Gas & Supply Co. by which the latter became a jobber of California Co. brands. Prior to that time the Navy company was jobbing Shell products. The California Co. has no refinery of its own in this territory, but has agreements with the Sinclair company for processing its crude at Parco, Wyo., and Utah Oil Refining Co. at Salt Lake City. It is reported each of these companies processes around 1,000 bbls. daily for the California Co. from the Medicine Bow field in Carbon County. Drilling operations in Medicine Bow in 1938 indicated that field, in which Ohio Oil Co. owns a half-interest, will fall below original estimates of ultimate recovery. A west offset to the discovery well was drilled to the granite without encountering any new reserves in deeper horizons and after plugging back to the pay sand made only 70 bbls. per day initial. The southern limits of the field were defined and recent completions have been comparatively small wells.

There were no completions or new operations in Lance Creek, but two wells are at interesting stages. Adams Oil & Gas Co. No. 1 Baker, joint with Felmont Corp., is shut down for orders at 5,626 feet waiting on the results of a Schlumberger test to locate the top of the Leo sand. The red marker was at 5,440 feet and the first saturation was encountered at 5,517 feet, close to where the top of the Leo was expected. A saturated core was recovered at 5,520-26 feet. A well at this location will mean an important extension of the productive area in the Leo sand.

Continental Oil Co. No. 7-B Schuricht, an edge well on the south in the Sundance sand pool, was drilled to 4,010 feet and swabbed 30 bbls. of fluid, of which 50 per cent was water. It was then plugged back to 3,936 feet to shut off the bottom water and is waiting on cement.

Ohio Oil Co. No. 5 Rohlff, 100 ft. E of C E½ Sec. 32-36n-65w. Rig.; W.O. equip.
Continental Oil Co. No. 14 Tom Bell, C NW SW Sec. 34-36n-65w. Dk.; W.O. equip.
Continental Oil Co. No. 3 Apex-4, SE SW NW Sec. 35-36n-65w. Drlg. 3,767 ft.
Argo Oil Co. No. 9 Elliott, NW SE SE Sec. 5-35n-65w. T.D. 3,979 ft. in sat. sd.; 7-in. cmtd.
Ohio Oil Co. No. 6 Leo O.P.C.-16, NW NE SW Sec. 35-36n-65w. Drlg. 4,265 ft.; top r.b. 3,971; W.O.C.
Continental Oil Co. Acct. Buck Creek Oil Co. No. 7-B Schuricht, NE SW SE Sec. 6-35n-65w. T.D. 4,010 ft.; P.B. to 3,935 ft., tstg.
F. F. Hintze et al No. 1 Wright-Govt., NW NW SE Sec. 30-36n-63w. Drlg. 3,100 ft.
Ohio Oil Co. No. 1 Jones, SE NE SE Sec. 30-35n-62w. Drlg. 2,873 ft. in Deadwood.
J. E. Manning No. 1 Hewitt-Govt., NW SW SW Sec. 4-35n-65w. Loc.
Cow Gulch Oil Co. No. 1 MaGoon, NE NE Sec. 33-35n-64w. Top Leo zone 1,980; W. 2,020; cmtd. 8¼-in. at 2,033; W.O.C.
Fall River Roy. & Prod. Co. No. 1 Govt., CSL SE SE Sec. 35-40n-61w. T.D. 1,000 ft.; rec. collapsed pipe; rerunning 12½-in.
H. D. Moore et al No. 1 Bergrem, NW Sec. 23-35n-63w. Drlg. 1,900 ft.
Adams O. & G. Co. No. 1 Baker, NW NE SW Sec. 8-35n-65w. S.D.O. 5,626 ft.

Park County

Stanolind Oil & Gas Co. No. 18 Elk-5, NW NE NW Section 30-58n-99w, Elk Basin field, was dry and abandoned at 3,079 feet. It is approximately a mile to the southeast of No. 26 Elk-2, which was completed in November in the Dakota at 2,496 feet for 20,000,000 feet of gas.

Dry Creek Oil Co. No. 1 State, C NE NW Sec. 16-50n-100w. T.D. 150 ft.; cmtd. 10-in.
E. J. Preston No. 1, SW SW Sec. 26-58n-98w. M.I.M.

Blue Ridge Co. No. 1 Mau, NE NE SW Sec. 25-58n-98w. Cmtd. 12½-in. 100 ft.; drlg. plug.
Resolute Oil Co. No. 2 State, C SW SW Sec. 16-57n-101w. T.D. 8,690 ft.; C.D.; 6⅝-in. 8,330 ft.; drlg. plug.

Platte County

Bill Griffin et al No. 1, NE SE NE Sec. 18-30n-67w. S.D. 550 ft.

Sublette County

Texas Co.-Frontier Pet. Co. No. 1 Unit, SE SE SW Sec. 1-28-11w. T.D. 6,247 ft.; cmtg. to rec. circ.
Yellowstone Oil Co. No. 1, 200 ft. N of S line of the H. L. Budd rnh., SE SE Sec. 31-13n-112w. S.D. 10 ft.
Progressive Oil Co. No. 1 Haddenham, C NE SE Sec. 21-28n-113w. Drlg. 832 ft.
Wyoming Pet. Corp. No. 1 Budd, C NE NE Sec. 10-29n-113w. T.D. 1,792 ft.; installing boilers to melt ice cone around dk.

Sweetwater County

Sinclair-Wyo. Oil Co. No. 81, SW NW NW Sec. 11-26n-90w. T.D. 2,030 ft.; some W. in base Sundance; may P.B.

Uinta County

Drusilla Connell No. 6 Govt., C NW NW Sec. 24-15n-118w. Spdg. 10 ft. (first report.)
Stove Creek Oil Co. No. 3 Govt., CWL SW NW Sec. 26-14n-119w. S.D. 300 ft.
Stove Creek Oil Co. No. 1 Govt., NE SW NE Sec. 26-14n-119w. T.D. 1,620 ft. (C.D.) W.O. 8¾-in.
Stove Creek Oil Co. No. 2 Govt., C SW NW Sec. 26-14n-119w. Drlg. 500 ft.

Washakie County

Paul Boether No. 1 Govt., SW NW Sec. 4-47n-90w. Drlg. 2,030 ft.
Frison Oil Co. No. 2 Govt., SE SW NE Sec. 24-47-90w. T.D. 145 ft.; P.&A.

Weston County

Osage field production in December was 23,345 bbls. and refiners took 19,200 bbls., the remainder going into storage.

F. G. Dilger, trustee, No. 16 Government, SW SW NE Section 30-46n-63w, was completed at 1,444 feet for 20 bbls. per day.

Krokar and others, No. 1, SE SE NW Section 31-47n-63, was dry in the Dakota after testing the Coffee Grounds sand and was abandoned at 501 feet.

A new operation to the north of the field is getting under way in Emil Anderson No. 1 Sunquist.

Emil Anderson et al No. 1, Sec. 12-47n-63w. R.O.G. for test to the Sundance. Dakota at the surface (first report).
Conway Oil Corp. No. 3 Govt., C NW SW Sec. 31-42n-60w. Drlg. 2,020 ft.
James Farrel No. 1 Govt., NE SE SE Sec. 2-44n-61w. T.D. 150 ft.; fsg. tools.
Selby & Langford No. 1, CNL NW SE Sec. 6-46n-63w. Drlg. below 300 ft.; showing for a well.
Whedon et al No. 1 Sec. 21-46n-64w. Drlg. 2,160 ft.
John Borophy No. 1 George, SW SE NW Sec. 26-48n-64w. T.D. 2,287 ft., pulled 5-⅛-in. to replace leaky joint.
Lem Johnston No. 1, NW SW Sec. 24-44n-63w. Drlg. 570 ft.
Bert Higgins No. 7, NE NE SE Sec. 5-46n-63w. Drlg. 385 ft.

MONTANA

Big Horn County

Buzetti & Corkins No. 1, NE NW Sec. 23-1s-32e. M.I.M.

Blaine County

Walter Drought No. 1 Stam, CSL SW SE Sec. 20-31n-18e. Drlg. 950 ft. (Formerly G. R. Teeters.)

Carbon County

Valentine M. Kirk et al No. 1 Robinson, SW SW NW Sec. 2-7s-21e. T.D. 2,040 ft.; rmg. to set 10-in.
Alex Beaton No. 1, CSL SE SE Sec. 23-6s-23e. T.D. 1,580 ft.; landed 6¼-in. on bttm.
R. C. Tarrant No. 2, SE NW Sec. 4-6s-18e. Drlg. 2,900 ft.; 7-in. at 2,880 ft.
Henderson Prod. Co. No. 1-H-11 Elk 11, SE SE NW Sec. 35-9s-23e. S.D. 1,810 ft.
Sha-Wha Pet. Co. No. 1 Govt., SW NW NE Sec. 35-9s-23e. S.D. 3,124 ft.
Miracle Oil Co. No. 2 Govt., CWL NE SE Sec. 4-6s-23e. S.D. 2,381 ft.

Cascade County

E. B. M. Oil Co. No. 1 Betts, CSL NW SE Sec. 34-18n-4e. T.D. 1,250 ft.; prep. to res.

Choteau County

Security Pet. Corp. No. 1 Johnson, C NE Sec. 23-26n-3e. S.D. 1,991 ft.; S.D. for 6⅝-in.; Sunburst 1,935-53 ft.

Dawson County

Frank C. Hughes No. 1 fee, NW NE SE Sec. 5-14n-55w. Drlg. 1,065 ft.

Daniels County

White Tail O. & G. Co. No. 2 Wiley, NW NW NW Sec. 10-36n-50e. Drlg. 1,928 ft.

Fallon County

Montana-Dakota Utilities Co. No. 45, Unit 7, SE NW SW Sec. 25-6n-60e. Drlg. 320 ft.

Fergus County

Baughman & Singley No. 1 Skaggs, C NW SW Sec. 7-15n-20e. S.D. 1,080 ft. (C.D.): in lower Quadrant.
Emmons et al No. 5 Stocker, SW NW SW Sec. 24-22n-18e. Drlg. 950 ft.

Glacier County

Cut Bank had two completions and one new operation.

K. D. Pardee No. 3 Tribal-179, NW NE SE Section 12-32n-6w, in the southern part of the field, will make a small well. Total depth, 2,985 feet; 7-inch at 2,946 feet; Cut Bank sand at 2,912-60 feet. It had a show of oil at 2,943 feet and is testing after shooting.

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NW Section 29-34n-6w, was completed at 2,708 feet, total depth, for 4,900,000 feet of gas per day from the Cut Bank at 2,670-2,705 feet. The 7-inch was set at 2,676 feet.

Glacier Pro. Co. No. 3 O'Brien, C SW SW Sec. 32-34n-5w. R.U. (first report)

Nadeau Bros. No. 1 Govt., NW SW NW Sec. 25-37n-5w. Colo. 498 ft.; 10¾-in. 513 ft.; drlg. depth not reported.

Judith Basin County

Fletcher E. Hunt No. 1 Doven, SE NE NW Sec. 30-14n-15e. Spd. and S.D.

Park County

Ben Ryan et al No. 1 Burgess, SE SW NW Sec. 28-2s-11e. Drlg. 1,550 ft.

Petroleum County

H. Clark Rowland No. 1 Brundidge-Mink, SE NW Sec. 35-14n-25e. S.D. 110 ft.

Watson Oil Co. No. 1 Austed, SW NW SE Sec. 22-13n-28e. Drlg. 800 ft.

O. B. Canfield No. 2 Govt., SE NE NE Sec. 21-17-24e. S.D. 780 ft.

Richland County

W. M. Fulton No. 1 Richardson, SW SW SE Sec. 29-26n-52e. Drlg. 540 ft.; small S.W. at 435 ft.

Teton County

Zodiac Oil Co.-Gulf States Oil Co. No. 1 Kellogg, NE NW NE Sec. 33-28n-5w. Drlg. 1,850 ft.

Gulf States Oil-Zodiac Oil Co. No. 1 Coffee-Wallenstein, SW SW SW Sec. 5-27-5w. S.D. 2,525 ft. until spring.

Toole County

Kevin-Sunburst had two completions.

Fulton-Commonwealth No. 2 Thompson, NW NE SW Section 28-35n-3w, in the west end, is much better than the average, being completed at 1,703 feet and flowing 100 bbls. per day after acidizing with 1,000 gallons. It had 400 feet of oil in the hole before treating. Contact was at 1,698-1,703 feet.

Superior Petroleum Co. No. 4 Goeddertz, CEL SE SW Section 12-35n-3w, is pumping 7 to 12 bbls. daily without acidizing at 1,525 feet, total depth, from the Sunburst sand at 1,495-1,523 feet.

W. M. Cassidy No. 1 Phoenix, CNL Section 28-35n-4w, in West Kevin, which promised an extension of the pool, was pumped off. It will swab to pull in the sludge caused by acidization.

Yellowstone County

Riverton Oil Co. No. 1 Fox, CEL NW NE Sec. 14-2n-23e. T.D. 1,990 ft.; rng. 6¼-in.

UTAH

Cane Creek Oil Co. No. 1 Govt., NW SW Sec. 31-26n-21e. Drlg. 2,538 ft.; out of salt at 2,530 ft.; S.O. and G.

Crescent Eagle Oil Co. No. 1 Brendel, SW SE Sec. 4-22s-19e. Drlg. 4,110 ft.

Summit County

Longwell Pet. Co. No. 1, SE SW SE Sec. 35-3n-5e. T.D. 2,876 ft.; sdtrkg.

West Texas Fields

(Continued from Page 73)

2,940 feet, 472 bbls. Ja-Chel Oil Co. No. 2 Sullivan, 2,045-75 feet, 414 bbls. Luse & Ice No. 4 Blair, 2,030-85 feet, 305 bbls. Magnolia Petroleum Co. No. 14-46 Sealy, 2,745-2,800 feet, 385 bbls. T. & P. Coal & Oil Co. No. 27 James, 2,206-2,392 feet, 9 bbls.

Winkler County

Magnolia Petroleum Co. No. 208 Walton, 2,812-2,917 feet, 1,554 bbls. Olsen Oil No. 2 E. W. Cowden, 2,850-2,995 feet, 484 bbls. S. W. Richardson No. 5 Continental-Jenkins, 3,310-55 feet, 488 bbls; No. 7 Cities Service-Scarborough, 2,960-98 feet, 486 bbls. J. R. Sharp No. 2 Sharp-Crume, location abandoned.

Yoakum County

Denver Producing & Refining Co. No. 11 Whittenburg, location temporarily abandoned; No. 5-A Whittenburg, location temporarily abandoned. Eastland Oil No. 2 Skelly-Candler, location temporarily abandoned. J. E. Mabee No. 2 N. W. Willard, 4,984-5,230 feet, 3,116 bbls. Shell Petroleum Corp. No. 4 Bennett, 5,100-5,261 feet, 412 bbls.

PANHANDLE FIELD COMPLETIONS

(24-hour tests.)

Carson County

Sinclair-Prairie No. 5 J. C. McConnell, 2,725-2,915 feet, 41,643,000 cu. ft. of gas.

Gray County

Magnolia Petroleum Co. No. 5 Tom Catlin, 3,125-3,210 feet, 349 bbls. Nabob Oil & Gas No. 5 J. S. Morse A, 2,765-2,820 feet, 1,318 bbls.

Hutchinson County

Cree & Hoover No. 2 W. B. Haile, 2,965-3,030 feet, 924 bbls.

Michigan Field Report

By
O. C. PRESSPRICH

Clare County Fields Report Most Completions in Week

SAGINAW, Mich., Jan. 16.—For the first time in weeks, central Michigan's new pools in Freeman and Redding townships of Clare County, forced the spotlight to turn in their direction to the neglect of the southwestern pools in Allegan and Van Buren County, especially the Bloomingdale town-lot development in Van Buren.

MICHIGAN CRUDE OIL RUNS

Daily Average for December, 1938

Pools—	Wells	Runs
Porter-Yost	394	6,017
Greendale-Chippewa	216	1,590
Geneva-Midland	2	12
Sherman-Isabella	64	2,087
Wise-Isabella	2	122
Vernon-Leaton-Denver	81	941
Freeman-Redding	39	6,676
Grant-Clare	2	2
Beaverton	23	203
Edenville	30	1,789
Bentley-Gladwin	34	670
Buckeye-Wicklund-Oard	401	10,940
Ogemaw	234	2,568
Secord-Gladwin	2	10
Adams-Arenac	10	103
Clayton-Arenac	52	3,173
Tuscola	1	0
Saginaw Area	58	69
Birch Run	25	47
Dundee-Monroe	3	15
Montcalm County	58	510
Allegan County	228	5,632
Muskegon	83	112
Van Buren County	90	9,967
Total	2,132	53,255

The Clare pools reported five producers and one dry hole for the largest batch of completions in recent weeks, and added approximately 6,400 bbls. to their daily potentials. Meantime the Bloomingdale district showed six new producers, the largest good for 400 bbls. daily, and found the oil stratum dry in four other tests. Biggest of the new producers in Clare County was Freeman Oil Co. No. 2 Van Horn, NW SE NE Section 4, Freeman Township, which was rated 2,000 bbls. daily naturally. Smallest of the Clare wells was C. L. Maguire No. 2 Barlow, good for 700 bbls. daily. The Allegan district had five completions, but four of them were dry holes and the fifth good for only 70 bbls. daily after acid treatment.

At mid-week announcement of December production figures by Oil and Gas Association of Michigan showed the biggest monthly total since May, with 1,620,905 bbls., boosting the 1938 total for all Michigan fields to 19,222,480 bbls., nearly 3,000,000 bbls. above the 1937 figure, the previous all-time record.

Last week also brought restoration by Simrall Corp. of its drastic 14-cent crude price cut, which other carriers had not followed, and witnessed a shift in the Freeman-Redding district voluntary production curb measures. The flat 50-barrels-a-day-per-well limitation put in effect after the price cut was abandoned in favor of a scheme based on market demand and well spacing, with the operators apparently intent on putting forth a determined effort at conservation of the field's resources.

The week's completions were:

Allegan County

Dorr Township (4n-12w)—Columbia Oil & Gas Co. No. 8 Richter, Section 30, 70 bbls. after acid.

Leighton Township (4n-11w)—Muskegon Oil Co. No. 1 DeHaan, NW SE SW Section 29, dry.

Overisel Township (4n-15w)—Stewart Oil Co. No. 3 Freye, NE NW SW Section 22, dry; No. 1 Lampan, NW SW SE Section 22, dry.

Clare County

Freeman Township (18-6w)—C. L. Maguire No. 2 Barlow, NW NW SE Section 3, 700 bbls. naturally. Freeman Oil Co. No. 2 Van Horn, NW SE NE Section 4, 2,000 bbls. naturally. C. L. Maguire No. 1 Coyne, NE NW NE Section 4, 700 bbls. naturally.

Redding Township (19-6w)—Socony-Vacuum Oil Co. No. 4 Fell, SW SE SE Section 33, 2,000 bbls., acidized; No. 5 Fell, SE SW SE Section 33, dry. Talbot Oil Co. No. 1 State, S SE SE Section 33, 1,000 bbls. naturally.

Barry County

Yankee Springs Township (3n-12w)—Yankee Springs Development Co. No. 1 Boyer, NE NW NW Section 14, dry.

Gladwin County

Bentley Township (17n-2e)—Archie Henry No. 1 Fowley, NW NW NE Section 26, abandoned after encountering water.

Tuscola County

Akron Township (14n-8e)—F. Norton No. 2 Sharp, SW NW NW Section 30, dry.

Van Buren County

Bangor Township (2s-16w)—Truss, Brown & Rose No. 1 Grinnell, NE SW SE Section 16, dry.

Bloomingdale Township (1s-14w)—Voorhees Drilling Co. No. B-1 Melvin, S SE SE Section 8, 300 bbls., acidized. Jetter Drilling Co. No. 2 Mann, SE SW SW Section 11, 150 bbls. naturally. W. H. Thourlby No. 1 Lake Mill, NE NE SE Section 14, dry. Rex Oil & Gas Co. No. 2 Holmes, NE NE NE Section 16, 400 bbls., acidized; No. 1 Van Pryon, NE SW NE Section 16, dry. C. E. Steele No. 1 Harrison, SW SW NW Section 16, 150 bbls., acidized. J. C. Fusheane No. 2 Lumber Co., SE SE NE Section 17, 50 bbls., naturally. Wiser Oil Co. No. 4 Boyes, NE NW NE Section 17, 400 bbls., naturally.

Pine Grove Township (1s-13w)—K. & F. Development Co. No. 1 Connery, NE NW SW Section 13, dry.

Canadian Fields

Completions and Operations in Northwest and in Ontario

By VICTOR LAURISTON

CHATHAM, Ontario.—Deliveries from Turner Valley to British American Oil Co. in Calgary during December totaled 94,275 bbls., compared with 86,243 bbls. in November. The December deliveries included 199 bbls. of discolored naphtha and 94,076 bbls. of crude oil.

In Southwest Turner Valley, Extension Royalties No. 1, LSD 14, Section 17-18-2w5, finished in the black lime at 8,020 feet. It was tubed and started flowing around 80 bbls. an hour natural, with gas flow at the rate of about 14,000,000 feet a day. Most of the wells immediately east flowed by heads. It has been acidized, and is testing for official allowable.

In Section 32-18-2w5, West Turner Petroleum No. 3, LSD 6, finished at 7,811 feet after getting the Madison lime at 7,245 feet, has been given allowable of 277.4 bbls. a day. Grandoro Mines, Ltd., has a 50 per cent interest.

Okalta Deep Test

West of the proven field, Okalta Oil Co. No. 6, LSD 3, Section 30-18-2w5, cemented back to 10,024 feet for a test of the upper lime, is swabbing to clear the formation of water. It will be treated with 6,000 gallons before testing production.

Home-Millarville Well

On the west flank of North Turner Valley, Home Oil Co. No. 2 Millarville, LSD 6, Section 33-20-3w5, finished close to 8,500 feet, and is testing production from the lower lime. The upper porous horizon of the Madison was 90 feet thick and showed a flush production estimated around 600 bbls. a day. The lower porous zone was about the same thickness. Production test is being made.

Dr. G. S. Hume, of the Geological Survey of Canada, who recently investigated North Turner Valley, states that the dip of the limestone is quite steep, indicating the production area may be narrower than in South Turner Valley. There is, however, considerable block-faulting within the structure, each fault thrusting up the limestone on the west side, so that where such faults are present, depths to the limestone within the fault blocks will not be so great as if no faulting had occurred. The area in the north will therefore be wider than if there had been no faulting. As to possibilities of a productive east flank in North Turner Valley, there appear to be surface evidences, but none at depth.

North Turner Valley

In North Turner Valley, Royalite Oil Co. No. 35, LSD 7, Section 27-20-3w5, is below 6,390 feet, and getting close to the Madison, after some additional caving trouble.

Davolite Drilling Program

Davolite Oil Co., incorporated as a subsidiary of Davies Petroleums, Ltd., is planning to drill three tests in Turner Valley. One will be in North Turner Valley, just south of Home Oil Co. No. 2 Millarville; and another about midway between the North and South Turner Valley crude areas. This would be west and a little north of the original Central Turner Valley naphtha field, in an area previously untested.

Davolite Oil Co. will also be associated with Davies Petroleums, Ltd., in completion of Davies Petroleums No. 3, LSD 7, Section 33-17-2w5, in the south end of the field, which has been standing with 10¾-inch casing cemented at 3,245 feet. This is about 2½ miles south of National Petroleum Corp. No. 2, the most southerly producer.

West Flank Prospects

The Davolite test to be located midway between the north and south crude areas will help to determine the possibility of continuous west flank crude production from Home-Millarville No. 2 on the north to National Petroleum Corp. No. 2 on the south, approximately 17 miles west of and parallel to the older gas-naphtha areas.

The first naphtha producer in the Madison limestone was Royalite Oil Co. No. 4, LSD 12, Section 7-20-2w5. The earliest naphtha wells were grouped south and west of the discovery, chiefly in Sections 1 and 12, Township 20-3w5. A later area of intensive naphtha development was in Section 20-19-2w5, with only a few scattered producers drilled in the intervening 2 miles. The naphtha field was gradually extended south and west to LSD 1, Section 21-18-2w5. The early South

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Turner Valley crude discoveries were on the west fringe of Section 28-18-2w5 and the crude area has been proven west and south of the South Turner Valley naphtha area for a distance of about 1 mile south and 3½ miles north of the southernmost naphtha producer.

In North Turner Valley the original crude producer was Model Oils No. 1, LSD 8, Section 22-20-3w5, and the most recent is Home No. 2 Millarville, LSD 3, Section 33-20-3w5, a distance of about three miles apart. There is, however, a gap, parallel to and west of the naphtha producers, where the west flank crude area is entirely untested. This gap extends from Model Oils No. 1, LSD 8, Section 22-20-3w5, to Vulcan Brown Petroleums No. 1 LSD 10, Section 5-19-2w5. The Model well is approximately 10 miles northwest of Vulcan-Brown No. 1. In this gap, the only recent drilling has been Dalhousie Oils Co. No. 8, Section 30-19-2w5, and Brown Oil Co. No. 3, Section 19-19-2w5, both of which finished dry and are now believed to mark the barren strip usually encountered between the crude and naphtha areas. Advance Oil Co. No. 5 A. LSD 16, Section 19-19-2w5, about midway between these two wells but a little farther east, and drilled some years ago, started as a naphtha well and turned to crude.

There has, however, been no drilling far enough west of the naphtha area to test the possibilities of this gap of approximately 10 miles between the two west flank crude areas; though some years ago a group of wells drilled on the Waite Valley structure, farther west, encountered faulted conditions and failed to develop commercial production. A crude producer in this strip midway between the two proven fields would open an immense area for development.

Tests in the Lime

In Section 17-18-2w5, South Turner Valley, Anglo-Canadian Oil Co. No. 3, LSD 10 is below 7,562 feet after getting the Madison limestone at 7,270 feet. In the far south, D. & D. Oils No. 1, LSD 12, Section 9-18-2w5, is below 6,979 feet, and 189 feet in the lime.

West Flank Drilling

In West-Central Turner Valley, Calwin Royalties No. 1, LSD 15, Section 5-18-2w5, is below 480 feet. Winalta Royalties No. 1, LSD 1, same section, is spudding. Royalties Oil Co. No. 37, LSD 11, is below 6,531 feet.

In Section 6-19-2w5, East Crest Oil Co. No. 4, LSD 8, is in the Benton formation below 4,368 feet.

In Section 32-18-2w5, Geo. Harris and Associates No. 2, LSD 15, is below 1,000 feet. Oil Ventures No. 1, LSD 14, is below 935 feet. Royalite Oil Co. No. 36, LSD 13-14, is in the Blairmore formation below 6,974 feet. J. & C. Perdue No. 1 British Colonial, LSD 5, has resumed with rotary from 2,150 feet where 10-inch casing was cemented. West Turner Petroleum No. 4, LSD 3, is rigging.

In Section 20-18-2w5, York Oils No. 2, LSD 6, is below 4,098 feet.

In Section 9-18-2w5, Geo. Harris & Associates No. 1, LSD 13, is below 2,432 feet.

West of the proven field, Scottish Petroleums No. 1, LSD 16, Section 19-18-2w5, is in the Benton formation below 4,408 feet. Royalite Oil Co. No. 38, LSD 16, Section 8-18-2w5, is in the Belly River formation below 3,266 feet. Anglo-Canadian Oil Co. No. 5, LSD 8, Section 31-18-2w5, is preparing to resume after cementing casing at 1,348 feet.

East Side Drilling

On the Twin Dome structure, northeast of Turner Valley, Anglo-Canadian Oil Co. No. 1, LSD 7, Section 16-21-28w4, is below 2,340 feet.

On the New Valley structure, McLeod Oil Co. No. 1, LSD 4, Section 6-21-2w5 has arranged to resume from 8,450 feet after a shut-down of several months. Test is being drilled under arrangement with New Valley Oil Co. The hole has been cleaned and casing run to bottom. Crude is standing about 2,000 feet in the hole and may be swabbed before deepening. Production was encountered in the cardium sandstone, but it is planned to carry the test to the Madison, which is expected in a few hundred feet.

West Turner Project

Amalgamation of West Turner Petroleum, Ltd., and British Pacific Oils, Ltd., has been proposed to facilitate a development program which will extend into North Turner Valley. The West Turner company has 160 acres in Section 32-18-2w5 with three producing wells and aggregate daily allowable of 783 bbls.; and derrick up for No. 4. The merger will bring in acreage in the vicinity of Home No. 2 Millarville.

Northern Foothills

On the Clearwater structure in the northern foothills, Altoba No. 1, Section 31-34-9w5, bottoming at 1,318 feet, is recementing preparatory to testing production from a sand between 1,196 and 1,286 feet.

On the Brazeau structure, west of Edmonton, Home Oil Co. No. 1, LSD 16, Section 7-43-17w5, bottoming at 4,520 feet, is cleaning out and carrying casing below 4,000 feet.

On the Grease Creek structure west of Olds, Grease Creek-Northwest Co. No. 1, LSD 2, Section 13-29-7w5, is below 130 feet.

Southern Foothills

On the Highwood-Sinclair structure, southwest of Turner Valley, Green Valley Oils No. 1 Banner, LSD 6, Section 34-17-3w5, is in softer formation below 6,620 feet, more than 1,260 feet in the Madison limestone.

On the Watson structure, Mar Jon Oil Co. No. 3, LSD 3, Section 4-10-2w5 has rigged rotary outfit and is preparing to resume from 6,120 feet.

On the Savannah Creek structure, Anglo-Canadian Oil Co. No. 1, SW Section 20-14-4w5 is shutting off surface water at 60 feet.

In the Pincher Creek area, Anglo-Canadian Oil Co. No. 1 Castle River, LSD 4, Section 11-6-1w5, is below 3,759 feet.

On the Quaich structure, Quaich Petroleums, Ltd., of Vancouver, British Columbia, will drill a test for C. & C. Petroleums of Vancouver, probably in Township 9-3w5. The area is about 3½ miles west of the Watson structure, and close to the British Columbia boundary. Brown, Moyer & Brown of Calgary are considering a test on the same structure, to be started this spring.

Border Fields

On the Bridge Dome structure, southern Alberta, Anglo-Canadian Oil Co. No. 1 Milk River, LSD 10, Section 4-2-13w4, has resumed from 1,950 feet, where 13⅜-inch casing was cemented.

Completion of the Yukon-Lundgren well in the North Cut Bank area of Montana, with a reported production of 70 bbls. a day of high gravity crude from the Moulton sand at 2,550 feet, is bringing the Montana development steadily closer to prospective oil areas in southern Alberta. Nadeau Bros. have located a test in NE Section 37n-5w, practically on the international line and only a few miles from the Ko-Top Oils test in the

(Continued on Page 90)

Summary of Operations, All Fields, December

SUMMARY OF OPERATIONS

Wells Completed

	Comp.	Prod.	Dry	Gas
Eastern fields	220	474	22	80
Lima	5	0	4	1
Central Ohio	75	220	21	47
Indiana	10	455	4	3
Illinois	354	72,741	53	7
Michigan	64	15,769	28	2
Eastern Kentucky	5	23	4	6
Western Kentucky	74	3,163	27	2
Kansas	120	52,938	26	3
Oklahoma	150	19,791	46	16
N. Central Texas	175	30,156	86	0
E. Central Texas	15	1,127	5	3
East Texas	72	4,010	2	0
East Texas Border	8	1,710	0	2
West Texas	150	117,246	18	2
Texas Panhandle	34	12,057	0	6
Southwest Texas	180	18,647	49	8
Texas Gulf Coast	93	25,102	16	3
La. Gulf Coast	46	10,935	13	0
North Louisiana	35	3,775	12	9
Arkansas	24	9,315	3	0
Mississippi	5	0	4	1
Montana	9	365	5	0
Wyoming	14	8,630	3	2
New Mexico	58	14,636	5	1
Utah	1	0	1	0
Total December	1,996	423,285	457	204
Total November	2,172	483,764	479	184
Difference	176	60,479	22	20

Wells Drilling

	Rigs	Dig.	Ttl.
Eastern fields	64	234	298
Lima	1	6	7
Central Ohio	39	102	141
Indiana	0	36	36
Western Kentucky	0	90	90
Eastern Kentucky	5	34	39
Michigan	20	111	131
Illinois	50	301	351
Kansas	29	148	177
Oklahoma	37	269	306
No. Central Texas	70	212	282
West Texas	93	234	327
Texas Panhandle	10	68	78
East Texas	17	37	54
East Central Texas	10	34	44
East Texas Border	8	10	18
Gulf Coast, Texas	18	110	128
Southwest Texas	30	173	203
Arkansas	19	33	52
North Louisiana	29	47	76
Gulf Coast, La.	16	107	123
Mississippi	6	0	6
Montana	2	54	56
Wyoming	1	65	66
New Mexico	10	140	150
Florida	2	0	2
Colorado	2	34	36
Alabama	0	1	1
Utah	1	3	4
Total December	589	2.723	3,312
Total November	561	2,917	3,478
Difference	28	194	166

KANSAS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Barber	1	0	0	1	0	0
Barton	17	9,004	2	0	2	18
Butler	6	180	1	0	0	8
Coffey	0	0	0	0	0	1
Cowley	6	4,401	3	0	3	12
Dickinson	0	0	0	0	0	1
Ellis	5	2,908	0	0	3	6
Ellsworth	6	4,399	0	0	0	1
Graham	1	0	1	0	0	1
Grant	1	0	0	1	0	0
Greenwood	4	0	4	0	0	7
Harvey	5	3,000	0	0	0	1
Kingman	1	50	0	0	0	1
Marion	0	0	0	0	0	3
McPherson	4	918	0	0	1	6
Meade	1	0	1	0	0	1
Ness	1	0	1	0	0	1
Osage	0	0	0	0	0	1
Ottawa	0	0	0	0	0	1
Pratt	0	0	0	0	0	1
Reno	1	0	1	0	0	3
Rice	17	10,073	4	1	3	14
Rooks	0	0	0	0	0	2
Russell	14	6,374	4	0	4	28
Saline	0	0	0	0	0	1
Scott	0	0	0	0	0	1
Sedgwick	3	1,111	0	0	0	5
Stafford	19	10,055	2	0	11	17
Sumner	3	390	1	0	2	2
Wabaunsee	0	0	0	0	0	1
Woodson	4	75	1	0	0	3
Ttl. Dec.	120	52,938	26	3	29	148
Ttl. Nov.	113	42,836	26	5	29	144
Difference	7	10.102	0	2	0	4

OKLAHOMA

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Beckham	0	0	0	0	0	1
Caddo	3	2,169	0	1	2	10
Carter	5	1,175	0	0	0	8
Choctaw	0	0	0	0	0	1
Cleveland	1	0	1	0	0	5
Coal	3	2,836	1	1	3	2
Comanche	0	0	0	0	0	2
Cotton	0	0	0	0	0	1
Creek	10	222	4	1	4	33
Garfield	1	10	0	0	0	6
Garvin	0	0	0	0	0	1
Grady	4	70	2	0	0	3
Hughes	4	0	2	2	0	3
Jackson	2	158	0	0	0	5
Jefferson	0	0	0	0	0	1
Kay	7	625	4	2	0	2
Kingfisher	0	0	0	0	0	2
Kiowa	0	0	0	0	0	3
Latimer	1	0	0	1	0	0
Lincoln	7	1,066	1	0	1	8
Logan	1	0	1	0	0	5
Marshall	1	0	1	0	0	1
McIntosh	1	0	1	0	0	0
Murray	0	0	0	0	1	0
Muskogee	4	4	2	1	1	7
Noble	2	0	2	0	0	3
Okfuskee	3	200	1	0	1	7
Oklahoma	3	514	0	1	4	12
Okmulgee	8	27	1	3	3	25
Osage	10	97	7	0	0	12
Pawnee	1	0	1	0	1	4
Payne	3	1,982	1	0	2	4
Pittsburg	1	0	0	1	0	2
Pontotoc	8	491	3	0	0	14
Pottawatomie	24	5,767	1	0	6	38
Sequoyah	0	0	0	0	0	1
Seminole	22	1,925	7	1	6	17
Stephens	7	330	2	1	0	6
Texas	0	0	0	0	0	2
Tillman	1	97	0	0	0	1
Tulsa	2	26	0	0	2	5
Wagoner	0	0	0	0	0	4
Washita	0	0	0	0	0	2
Ttl. Dec.	150	19,791	46	16	37	269
Ttl. Nov.	106	11,001	29	7	40	283
Difference	44	8,790	17	9	3	14

WEST TEXAS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Andrews	11	5,217	4	2	6	11
Brewster	0	0	0	0	0	2
Cochran	0	0	0	0	0	2
Coke	0	0	0	0	0	1
Crane	8	12,388	0	0	5	7
Crockett	2	85	0	0	2	2
Culberson	0	0	0	0	0	4
Concho	0	0	0	0	0	2
Dawson	0	0	0	0	0	2
Ector	42	43,414	3	0	19	53
El Paso	0	0	0	0	0	1
Gaines	3	2,448	0	0	3	7
Garza	0	0	0	0	0	1
Glasscock	1	0	1	0	0	2
Hockley	3	1,106	0	0	1	1
Howard	9	10,037	0	0	7	21
Hudspeth	0	0	0	0	0	2
Jeff Davis	1	0	1	0	0	0
Kent	0	0	0	0	0	2
Kimble	0	0	0	0	0	2
Loving	0	0	0	0	1	0
Lynn	0	0	0	0	0	1
Martin	0	0	0	0	0	1
Menard	1	0	1	0	0	1
Mitchell	0	0	0	0	0	1
Nolan	0	0	0	0	0	3
Pecos	18	2,662	3	0	17	29
Presidio	0	0	0	0	0	2
Reagan	1	0	1	0	0	0
Reeves	0	0	0	0	0	3
Schleicher	0	0	0	0	0	3
Scurry	0	0	0	0	3	3
Sterling	0	0	0	0	1	0
Sutton	0	0	0	0	0	1
Terrell	0	0	0	0	0	1
Tom Green	1	0	1	0	0	2
Upton	9	5,094	1	0	3	10
Val Verde	1	0	1	0	4	0
Ward	15	6,117	1	0	8	19
Winkler	9	9,990	0	0	3	14
Yoakum	15	18,688	0	0	10	15
Ttl. Dec.	150	117,246	18	2	93	234
Ttl. Nov.	177	122,365	25	1	64	248
Difference	27	5,119	7	1	29	14

CENTRAL AND NORTH TEXAS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Archer	13	2,490	6	0	6	12
Baylor	1	0	1	0	0	1
Brown	12	149	5	0	2	10
Callahan	10	182	8	0	0	7
Clay	22	1,018	8	0	2	9
Coleman	2	0	2	0	2	10
Comanche	6	11	3	0	0	6
Cooke	4	1,030	3	0	4	5
Denton	0	0	0	0	0	3
Erath	0	0	0	0	0	2
Eastland	2	0	2	0	0	5
Fisher	0	0	0	0	2	1
Foard	0	0	0	0	1	0
Hamilton	0	0	0	0	0	2
Haskell	2	0	2	0	0	3
Hood	0	0	0	0	0	1
Jack	9	350	6	0	3	9
Johnson	0	0	0	0	0	1
Jones	10	3,419	4	0	4	13
Montague	2	0	2	0	0	4
Palo Pinto	1	8	0	0	0	3
Parker	0	0	0	0	0	2
Shackelford	15	417	9	0	5	14
Stephens	1	42	0	0	2	4
Tarrant	0	0	0	0	0	2
Taylor	4	203	3	0	0	1
Throckmorton	0	0	0	0	0	4
Wichita	42	19,775	10	0	25	44
Wilbarger	3	41	2	0	1	2
Wise	0	0	0	0	2	5
Young	14	1,021	10	0	8	27
Ttl. Dec.	175	30,156	86	0	70	212
Ttl. Nov.	221	46,081	85	3	75	228
Difference	46	15,925	1	3	5	16

EAST AND EAST CENTRAL TEXAS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Anderson	4	191	0	2	0	5
Angelina	0	0	0	0	1	0
Cherokee	1	0	1	0	0	1
Collins	0	0	0	0	0	1
Dallas	0	0	0	0	0	1
Falls	0	0	0	0	0	2
Franklin	1	206	0	0	1	1
Freestone	3	396	0	1	1	3
Grayson	0	0	0	0	1	4
Gregg	44	2,817	0	0	12	18
Henderson	3	334	1	0	1	1
Houston	1	0	1	0	0	2
Kaufman	1	0	1	0	3	0
Lamar	0	0	0	0	0	1
Leon	0	0	0	0	1	0
McLennan	0	0	0	0	0	3
Morris	0	0	0	0	1	0
Rains	0	0	0	0	0	1
Red River	0	0	0	0	0	2
Rusk	21	1,014	0	0	3	10
Smith	3	146	0	0	0	3
Titus	0	0	0	0	0	3
Trinity	2	0	2	0	0	1
Upshur	3	33	1	0	2	5
Van Zandt	0	0	0	0	0	3
Ttl. Dec.	87	5,137	7	3	27	71
Ttl. Nov.	133	7,862	12	3	25	77
Difference	46	2,725	5	0	2	6

TEXAS PANHANDLE

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Carson	2	513	0	1	0	9
Collingsworth	1	777	0	0	2	2
Deaf Smith	0	0	0	0	1	1
Donley	0	0	0	0	0	2
Dickens	0	0	0	0	0	2
Floyd	0	0	0	0	0	1
Gray	10	4,568	0	0	1	19
Hutchinson	15	6,179	0	0	4	24
Lipscomb	0	0	0	0	0	1
Moore	5	0	0	5	0	1
Potter	0	0	0	0	1	1
Roberts	0	0	0	0	0	2
Wheeler	1	20	0	0	1	3
Ttl. Dec.	34	12,057	0	6	10	68
Ttl. Nov.	48	12,494	2	13	13	75
Difference	14	437	2	7	3	7

SOUTHWEST TEXAS

Summary of Field Operations

Field—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Agua Dulce	0	0	0	0	0	2
Alice (South)	7	350	2	1	2	7
Alta Vista	1	5	0	0	0	1
Angelita	0	0	0	0	0	1
Batesville	0	0	0	0	1	0
Benavides	2	165	0	0	2	2
Bird Island	1	0	0	1	0	0
Branyon	3	128	1	0	0	3
Carroll	0	0	0	0	1	0
Church	0	0	0	0	0	1
Chriseman	1	35	0	0	0	1
Casa Blanca	2	95	0	0	0	1
Chicon Lake	2	2	1	0	0	1
C. Driscoll	6	633	0	1	1	4
Comitas	0	0	0	0	1	1
Dale	1	25	0	0	0	1
Darst Creek	4	406	0	0	1	2
Driscoll	1	204	0	0	0	1
Dunlap	0	0	0	0	0	1
Eagle Hill	2	50	1	0	0	2
East Placedo	0	0	0	0	0	1
E. Premont	1	102	0	0	0	0
Escobas	1	60	0	0	0	0
East White Point	3	351	0	0	0	4
Ezzell	9	1,187	1	0	0	2
Fitzsimmons	7	871	2	0	2	3
Flour Bluff	1	178	0	0	0	0
Heyser	4	761	0	1	1	3
Hoffman	15	1,101	1	1	1	4
Kelsey	3	135	2	0	0	3
Kimbro	0	0	0	0	0	1
Keeran	0	0	0	0	0	1
La Rosa	4	596	0	0	0	6
Longhorn	1	194	0	0	0	2
Luby	3	381	0	0	1	3
Luling	0	0	0	0	0	2
Lundell	5	560	0	0	0	1
McCampbell	9	1,254	0	0	4	6
McFaddin	2	228	0	0	0	2
Mercedes	1	30	0	0	0	0
Mirando Valley	1	0	1	0	1	0
Munson	1	0	1	0	0	2
O'Hern	0	0	0	0	0	1
Nash Creek	0	0	0	0	0	1
North Killam	1	131	0	0	0	1
Oakville	1	100	0	0	0	1
Palanaga	0	0	0	0	0	1
Plymouth	1	147	0	0	0	1
Premont	0	0	0	0	0	1
Rancho Solo	3	262	1	0	0	2
Refugio	2	233	0	0	0	1
Ricaby	2	200	0	0	0	1
Richard King	1	130	0	0	0	1
Riddle	1	0	1	0	0	1
Riverside	1	0	0	1	0	1
Sacatosa	2	0	2	0	0	0
Schattel	0	0	0	0	0	1
Salt Flat	4	149	0	0	0	4
Samfordyce	1	18	0	0	2	2
Saxet	5	413	1	0	2	4
Saxet Heights	1	135	0	0	0	0
South Clara Driscoll	1	102	0	0	0	1
Somerset	0	0	0	0	0	1
Sinton	0	0	0	0	0	1
Sun	1	117	0	0	0	3
Tesoro	1	110	0	0	0	1
Tomoconnor	9	5,850	0	0	1	3
Tulsita	0	0	0	0	0	1
Von Ormy	1	3	0	0	0	1
Yoast	0	0	0	0	0	1
West Saxet	8	460	3	1	1	1
Walnut Creek	0	0	0	0	0	1
Woodsboro	1	0	0	1	0	0
Miscellaneous	28	0	28	0	5	53
Ttl. Dec.	180	18,647	49	8	30	173
Ttl. Nov.	192	21,554	66	10	25	183
Difference	12	2,907	17	2	5	10

TEXAS GULF COAST

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Ace	0	0	0	0	0	1
Anahuac	4	1,929	1	0	0	3
Batson	0	0	0	0	1	0
Bay City	0	0	0	0	0	1
Bammel	0	0	0	0	1	1
Barbers Hill	0	0	0	0	0	1
Cedar Point	0	0	0	0	0	1
Cheek	2	1,104	0	0	0	1
Clear Lake	0	0	0	0	0	1
Clam Lake	1	401	0	0	0	1
Cotton Lake	2	204	0	0	0	3
Cordelle	1	94	0	0	0	2
Danbury	3	75	1	0	0	1
Dickinson	4	1.722	0	1	1	7
Eureka	2	885	0	0	0	4
Esperson	0	0	0	0	0	1
Fairbanks	12	2,604	0	0	3	12
Friendswood	9	4,283	0	0	1	4
Hankamer	0	0	0	0	0	1
Hardin	8	3,402	0	0	2	5
Hastings	6	2,299	2	0	1	3
High Island	0	0	0	0	0	1
League City	2	348	0	0	1	4
Lockridge	0	0	0	0	0	2
Labelle	0	0	0	0	0	1
Magnet	1	72	0	0	1	3
Manvel	0	0	0	0	0	2
McCrosky	0	0	0	0	0	1
NW. Conroe	1	0	0	1	0	0
Old Ocean	0	0	0	0	1	5
Orchard	1	39	0	0	0	0
Orange	5	1,388	0	0	1	4
Pickett Ridge	2	165	1	0	0	0
Seabreeze	1	0	0	1	0	2
Segno	2	1,401	0	0	0	4
Spindletop	1	189	0	0	0	1
Spurger	0	0	0	0	0	1
Thompson	2	358	0	0	0	3
Tomball	1	479	0	0	0	2
Turtle Bay	0	0	0	0	0	2
Van Vleck	1	375	0	0	0	1
West Ranch	0	0	0	0	0	1
W. Columbia	2	752	0	0	1	2
Withers	6	534	0	0	1	3
Miscellaneous	11	0	11	0	2	11
Total Dec.	93	25,102	16	3	18	110
Total Nov.	108	28,068	24	1	17	110
Difference	10	2,966	8	2	1	0

COASTAL LOUISIANA

Summary of Field Operations

Field—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Abbeville	0	0	0	0	1	0
Bayou Blue	1	0	1	0	0	1
Bancroft	3	1,140	0	0	1	3
Bateman Lake	0	0	0	0	1	1
Bay St. Elaine	0	0	0	0	0	1
Bayou Boullion	0	0	0	0	0	1
Bayou Cocotriz	1	552	0	0	0	1
Bayou des Allemands	0	0	0	0	1	0
Black Bayou	0	0	0	0	0	1
Caillou Island	1	497	0	0	0	1
Cameron Meadows	0	0	0	0	0	1
Creole	1	387	0	0	1	0
Chacahoula	1	330	0	0	0	1
Charenton	3	431	1	0	0	3
Choctaw	0	0	0	0	0	2
Convent	0	0	0	0	0	1
Darrow	1	0	1	0	0	1
Dog Lake	0	0	0	0	0	1
East Baton Rouge	2	350	1	0	0	2
Edgerly	1	0	1	0	0	1
Fausse Point	0	0	0	0	0	1
Four Isle	0	0	0	0	0	1
Garden Island	1	516	0	0	0	1
Gillis	1	45	0	0	0	1
Grand Bay	0	0	0	0	0	1
Gueydan	2	0	2	0	0	0
Hackberry	2	308	0	0	1	5
Horseshoe Bayou	0	0	0	0	0	1
Jeanerette	0	0	0	0	0	2
Jefferson Island	0	0	0	0	0	1
Jennings	6	1,720	0	0	1	13
Lafitte	0	0	0	0	0	2
Lake Hermitage	0	0	0	0	1	0
Lake Long	1	242	0	0	0	1
Lake Pelto	0	0	0	0	0	1
Lake Verret	1	273	0	0	1	0
Leesville	0	0	0	0	0	1
Lirette	0	0	0	0	0	1
N. Crowley	2	843	0	0	0	1
N. Tepetate	1	158	0	0	0	2
New Iberia	2	415	1	0	1	3
Porte Barre	0	0	0	0	0	2
Potash	0	0	0	0	0	1
Quarantine Bay	0	0	0	0	0	2

Raceland	1	770	0	0	0	0
South Houma	1	450	0	0	1	0
S. Roanoke	0	0	0	0	0	1
Sorrento	0	0	0	0	0	1
Starks	1	0	1	0	0	0
Sweet Lake	0	0	0	0	0	1
Sulfur	0	0	0	0	0	3
Timbalier Bay	0	0	0	0	0	2
Valentine	0	0	0	0	0	4
Venice	0	0	0	0	0	1
Villa Platte	4	1,385	0	0	1	5
Vinton	0	0	0	0	0	1
West Gueydan	0	0	0	0	0	1
Woodlawn	1	123	0	0	0	1
Miscellaneous	4	0	4	0	4	19
Ttl. Dec.	46	10,935	13	0	16	107
Ttl. Nov.	45	8,969	16	2	11	121
Difference	1	1,966	3	2	5	14

NORTH LOUISIANA

Summary of Field Operations

Parish—	Comp.	Prod.	Dry	Gas	*Rgs.	Dlg.
Bienville	1	0	0	1	0	2
Bossier	2	10	0	1	3	1
Caddo Rodessa	0	0	0	0	0	1
Caddo other	11	1,200	3	0	8	17
Caldwell	0	0	0	0	0	1
Catahoula	0	0	0	0	1	0
Claiborne	1	15	0	0	1	0
Concordia	0	0	0	0	1	0
De Soto	2	0	1	1	3	0
Grant	1	0	1	0	1	0
LaSalle	1	0	1	0	0	2
Madison	1	0	1	0	0	1
Natchitoches	0	0	0	0	0	1
Red River	2	0	2	0	1	0
Sabine	4	40	3	0	8	3
Tensas	0	0	0	0	1	0
Union	2	0	0	2	0	2
Webster	7	2,510	0	4	1	16
Ttl. Dec.	35	3,775	12	9	29	47
Ttl. Nov.	47	3,435	15	12	21	66
Difference	12	340	3	3	8	19

*Gas production: Bienville Parish, 22,879,000 cu. ft.; Bossier Parish, 60,000,000 cu. ft.; De Soto Parish, 5,000,000 cu. ft.; Union Parish, 29,000,000 cu. ft.; Webster Parish, 16,800,000 cu. ft.

ARKANSAS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Calhoun	1	0	1	0	1	0
Columbia	5	2,800	0	0	5	3
Hot Spring	0	0	0	0	0	1
Lafayette	0	0	0	0	1	1
Lincoln	0	0	0	0	1	0
Little River	0	0	0	0	3	0
Lonoke	0	0	0	0	3	0
Miller Rodessa	1	480	0	0	2	3
Mississippi	0	0	0	0	0	1
Nevada	2	30	0	0	0	2
Pulaski	1	0	1	0	0	0
Union	14	6,005	1	0	3	22
Ttl. Dec.	24	9,315	3	0	19	33
Ttl. Nov.	22	12,940	7	0	14	40
Difference	2	3,595	4	0	5	7

MISSISSIPPI

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	*Rgs.	Dlg.
Calhoun	1	0	1	0	1	0
Clarke	0	0	0	0	1	0
George	1	0	1	0	0	0
Harrison	1	0	1	0	0	0
Hinds	0	0	0	0	2	0
Rankin	1	0	0	1	0	0
Simpson	0	0	0	0	2	0
Yalobusha	1	0	1	0	0	0
Ttl. Dec.	5	0	4	1	6	0
Ttl. Nov.	2	0	1	1	8	3
Difference	3	0	3	0	2	3

*Gas production: Rankin County, 40,000,000 cu. ft.

FLORIDA

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Lake	0	0	0	0	1	0
Nassau	0	0	0	0	1	0
Ttl. Dec.	0	0	0	0	2	0
Ttl. Nov.	0	0	0	0	2	0
Difference	0	0	0	0	0	0

ALABAMA

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Barbour	0	0	0	0	0	1
Ttl. Dec.	0	0	0	0	0	1
Ttl. Nov.	0	0	0	0	1	0
Difference	0	0	0	0	1	1

EAST TEXAS BORDER

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	*Rgs.	Dlg.
Harrison	0	0	0	0	0	1
Marion Rodessa	7	1,445	0	1	2	7
Marion other	0	0	0	0	2	0
Panola	0	0	0	0	2	0
Sabine	0	0	0	0	1	1
Shelby	1	265	0	1	1	0
San Augustine	0	0	0	0	0	1
Ttl. Dec.	8	1,710	0	2	8	10
Ttl. Nov.	9	1,895	0	2	6	12
Difference:	1	185	0	0	2	2

*Gas production: Marion County, 20,000,000 cu. ft.; Shelby County, 40,000,000 cu. ft.

ROCKY MOUNTAIN AREA

New Mexico

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Bernalillo	0	0	0	0	0	2
McKinley	0	0	0	0	0	4
Rio Arriba	0	0	0	0	1	0
San Juan	2	5	1	0	1	9
San Miguel	0	0	0	0	0	3
Socorro	0	0	0	0	0	1
Torrance	0	0	0	0	0	2
Valencia	0	0	0	0	1	2
Lea	47	14,243	2	1	6	86
Eddy	9	328	2	0	1	26
Chaves	0	0	0	0	0	2
DeBaca	0	0	0	0	0	2
Roosevelt	0	0	0	0	0	1
Ttl. Dec.	58	14,636	5	1	10	140
Ttl. Nov.	44	19,948	6	2	14	142
Difference	14	5,312	1	1	4	2

Colorado

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Adams	0	0	0	0	0	2
Archuleta	0	0	0	0	0	3
Elbert	0	0	0	0	0	1
Fremont	0	0	0	0	0	1
La Plata	0	0	0	0	0	1
Las Animas	0	0	0	0	0	2
Mesa	0	0	0	0	0	2
Moffat	0	0	0	0	0	4
Park	0	0	0	0	0	2
Prowers	0	0	0	0	0	1
Pueblo	0	0	0	0	1	2
Rio Blanco	0	0	0	0	0	1
Routt	0	0	0	0	0	3
Miscellaneous	0	0	0	0	1	9
Ttl. Dec.	0	0	0	0	2	34
Ttl. Nov.	2	3	1	0	2	31
Difference	2	3	1	0	0	3

Wyoming

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Big Horn	1	6,000	0	0	0	6
Carbon	2	70	0	1	0	3
Converse	2	0	1	1	0	11
Fremont	1	0	1	0	0	6
Hot Springs	2	88	0	0	0	0
Lincoln	0	0	0	0	0	2
Natrona	1	75	0	0	0	1
Niobrara	4	1,997	1	0	1	9
Park	0	0	0	0	0	2
Sublette	0	0	0	0	0	4
Sweetwater	1	400	0	0	0	2
Uinta	0	0	0	0	0	3
Washakie	0	0	0	0	0	2
Weston	0	0	0	0	0	10
Miscellaneous	0	0	0	0	0	4
Ttl. Dec.	14	8,630	3	2	1	65
Ttl. Nov.	10	2,743	5	1	4	69
Difference	4	5,887	2	1	3	4

Montana

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Big Horn	0	0	0	0	0	2
Carbon	0	0	0	0	0	8
Fergus	0	0	0	0	0	5
Glacier	3	320	1	0	0	5
Hill	0	0	0	0	0	2
Judith Basin	1	0	1	0	0	1
Petroleum	0	0	0	0	0	3
Pondera	1	0	1	0	0	0
Teton	0	0	0	0	0	2
Toole	3	45	1	0	2	13
Yellowstone	1	0	1	0	0	1
Miscellaneous	0	0	0	0	0	12
Ttl. Dec.	9	365	5	0	2	54
Ttl. Nov.	8	580	2	1	1	53
Difference	1	215	3	1	1	1

Utah

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Ttl. Dec.	0	0	0	0	1	3
Ttl. Nov.	1	0	1	0	1	3
Difference	1	0	1	0	0	0

WESTERN KENTUCKY

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Breckinridge	1	0	1	0	0	1
Butler	14	93	6	0	0	5
Christian	0	0	0	0	0	3
Daviess	21	2,215	0	1	0	28
Grayson	1	0	0	1	0	1
Hancock	7	105	2	0	0	6
Henderson	10	650	4	0	0	18
Hopkins	0	0	0	0	0	3
Logan	0	0	0	0	0	1
McLean	5	50	4	0	0	6
Muhlenberg	0	0	0	0	0	2
Ohio	14	50	9	0	0	14
Todd	0	0	0	0	0	1
Webster	1	0	1	0	0	1
Total Dec.	74	3,163	27	2	0	90
Total Nov.	58	3,407	23	1	0	96
Difference	16	244	4	1	0	6

EASTERN KENTUCKY

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Lee	1	8	0	0	0	6
Powell	2	10	0	0	0	2
Magoffin	0	0	0	0	0	3
Estill	2	5	1	0	0	1
Martin	0	0	1	5	2	3
Floyd	0	0	1	1	1	8
Pike	0	0	0	0	1	5
Wolfe	0	0	0	0	1	2
Knott	0	0	1	0	0	4
Ttl. Dec.	5	23	4	6	5	34
Ttl. Nov.	12	102	0	7	4	38
Difference	8	79	4	1	1	4

INDIANA

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Blackford	1	0	0	1	0	0
Clay	0	0	0	0	0	1
Crawford	0	0	0	0	0	2
Daviess	0	0	0	0	0	2
Decatur	1	0	0	1	0	0
Gibson	1	400	0	0	0	2
Harrison	1	0	1	0	0	0
Knox	0	0	0	0	0	3
Madison	0	0	0	0	0	1
Martin	0	0	0	0	0	1
Orange	0	0	0	0	0	1
Perry	0	0	0	0	0	1
Pike	2	0	1	1	0	1
Posey	1	50	0	0	0	3
Shelby	0	0	0	0	0	1
Spencer	1	5	0	0	0	3
Sullivan	1	0	1	0	0	6
Vanderburgh	0	0	0	0	0	3
Vigo	0	0	0	0	0	2
Warrick	1	0	1	0	0	3
Total Dec.	10	455	4	3	0	36
Total Nov.	11	87	7	1	1	32
Difference	1	368	3	2	1	4

MICHIGAN

Summary of Field Operations

Field—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Adams	0	0	0	0	0	6
Bentley	1	122	0	0	0	2
Bloomingdale	16	6,886	2	0	3	18
Buckeye	2	185	0	0	0	0
Clayton	0	0	0	0	0	1
Columbia	1	16	0	0	0	3
Deerfield	0	0	0	0	0	1
Dorr	1	200	0	0	0	2
Edenville	1	320	0	0	1	1
Edmore	1	0	0	1	0	0
Freeman	5	4,860	0	0	7	19
Fremont	1	0	1	0	0	1
Overisel	1	100	0	0	0	3
Salem	2	222	0	0	1	5
Sherman	2	438	1	0	0	1
Skunk Lake	3	810	0	0	1	11
Stewart	2	1,500	1	0	1	2
Trowbridge	1	0	1	0	0	0
West Branch	1	110	0	0	0	2
Winegars	0	0	0	0	0	1
Winfield	1	0	0	1	1	0
Wise	0	0	0	0	0	0
Wisener	0	0	0	0	0	2
Wildcats	22	0	22	0	5	30
Ttl. Dec.	64	15,769	28	2	20	111
Ttl. Nov.	98	54,938	35	2	28	106
Difference	34	39,169	7	0	8	5

OHIO

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Ashland	4	1	2	1	0	1
Athens	8	0	3	5	2	9
Belmont	2	0	0	2	1	1
Coshocton	1	0	1	0	1	2
Cuyahoga	0	0	0	0	1	4
Fairfield	1	0	0	1	0	2
Gallia	0	0	0	0	1	0
Guernsey	4	0	1	3	3	5
Harrison	0	0	0	0	0	1
Hocking	0	0	0	0	0	2
Holmes	0	0	0	0	0	3
Huron	1	0	0	1	0	1
Knox	7	142	2	4	4	4
Lawrence	0	0	0	0	1	3
Licking	4	66	0	2	8	8
Lorain	1	0	1	0	0	1
Medina	2	0	1	1	0	3
Meigs	5	0	2	3	3	6
Monroe	3	0	0	3	0	5
Morgan	2	1	0	1	3	4
Muskingum	2	0	1	1	2	2
Noble	4	0	1	3	2	6
Perry	5	0	2	3	0	5
Richland	0	0	0	0	0	2
Stark	5	0	0	5	0	4
Summit	0	0	0	0	0	2
Tuscarawas	2	0	1	1	0	1
Washington	11	10	3	6	7	14
Wayne	1	0	0	1	0	1
Ttl. Dec.	75	220	21	47	39	102
Ttl. Nov.	80	240	27	39	37	109
Difference	5	20	6	8	2	7

LIMA FIELD

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Hancock	1	0	1	0	0	1
Putnam	0	0	0	0	1	1
Seneca	4	0	3	1	0	3
Wood	0	0	0	0	0	1
Ttl. Dec.	5	0	4	1	1	6
Ttl. Nov.	3	0	1	2	2	7
Difference	2	0	3	1	1	1

ILLINOIS

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Bond	2	20	1	0	0	5
Champaign	0	0	0	0	1	3
Clark	2	0	2	0	1	2
Clay	11	3,109	2	0	3	10
Clinton	13	395	5	0	4	9
Coles	0	0	0	0	0	5
Crawford	0	0	0	0	0	1
Cumberland	1	0	1	0	0	1
Dewitt	0	0	0	0	0	2
Edgar	0	0	0	0	1	2
Edwards	0	0	0	0	0	1
Effingham	0	0	0	0	0	1
Fayette	119	28,624	5	4	11	96
Franklin	0	0	0	0	0	1
Fulton	0	0	0	0	0	1
Gallatin	0	0	0	0	0	2
Hamilton	0	0	0	0	0	1
Jackson	1	0	1	0	0	1
Jefferson	10	682	7	0	0	5
Jasper	1	0	1	0	0	0
Johnson	0	0	0	0	0	1
Knox	0	0	0	0	0	1
Lawrence	6	15	2	3	0	3
McDonough	0	0	0	0	0	4
Macoupin	0	0	0	0	0	1
Madison	0	0	0	0	0	1
Marion	158	36,939	7	0	26	138
Massac	0	0	0	0	0	1
Menard	0	0	0	0	0	1
Montgomery	0	0	0	0	0	4
Piatt	1	0	1	0	0	0
Pike	0	0	0	0	0	1
Randolph	0	0	0	0	0	2
Richland	6	733	2	0	0	3
Sangamon	0	0	0	0	0	1
Schuyler	0	0	0	0	0	1
St. Clair	2	0	2	0	0	2
Saline	0	0	0	0	0	1
Shelby	3	0	3	0	1	6
Wabash	2	40	1	0	0	1
Wayne	12	2,184	4	0	1	5
Washington	2	0	2	0	1	3
White	1	0	1	0	0	1
Williamson	1	0	1	0	0	0
Ttl. Dec.	354	72,741	51	7	50	331
Ttl. Nov.	364	81,622	42	3	69	368
Difference	10	8,881	9	4	19	37

Canadian Fields

(Continued from Page 88)

Alberta end of the international Red Coulee field. Results of drilling in Montana north of the proven field will have an influence on operations in the Red Coulee and Del Bonita areas of southern Alberta.

Steveville Operations

In the Steveville area, east of Calgary, Anglo-Canadian Oil Co. No. 1, LSD 2, Section 13-21-12w4, is below 2,544 feet. Anaconda Oil Co. No. 1, LSD 15, Section 9-22-12w4, is standing at 2,505 feet, waiting for 8⅝-inch casing.

Saskatchewan Operations

In the Vera-Unity area, western Saskatchewan, Vera Oilfields No. 2, LSD 5, Section 23-41-24w3 is deepening in the Devonian limestone below 2,200 feet after a fishing job. It got a good show of crude at 2,090 feet at the Devonian contact. Shows were also met at 1,770, 1,900 and 2,010 feet.

In southwest Saskatchewan, Twin Provinces No. 1, Section 21-11-29w3, standing since 1937 at 2,100 feet, will be completed by Western Royalties of Calgary, which is preparing to resume operations. In the same general area, Triangle Oil & Gas Co. No. 2, LSD 4, Section 31-29-27w3, has shut down till the spring.

In eastern Saskatchewan, Northern Royalties No. 2, LSD 6, Section 35-29-32w1 has shut down for the winter at 788 feet.

In the Simpson area, Simpson Oil Co No. 2, LSD 2, Section 11-29-25w2 has new derrick up with machinery rigged. The test, bottoming at 2,512 feet, has been standing since 1937, and will make water shut-off at 2,304 feet, pulling the 6-inch casing and running 8-inch to around 2,500 feet where an oil show will be tested. On the first run of the bailer considerable oil was brought up.

In the Riverhurst area, Riverhurst Gas & Oil Co. No. 3, Section 33-22-7w5 has shut down for the winter.

WILDCAT OPERATIONS

CALIFORNIA

IMPORTANT WELLS AND NORTHERN CALIFORNIA WILDCATS

Company, well, location and county—	S.T.R.	Depth	Status
Douglas & Stratton, No. 1 Los Alamos, S. Barbara	8- 8-33	7,237	pump 280 b.d.
Richfield Oil, No. 1 Tinaquaic, Foxen Can., S. Barb.	36- 9-32	3,373	sd. sh. drlg.
United West. Oil, No. 1 Los Olivos, Santa Barbara	16- 7-30	3,270	redrlg. 3,120
Litho Oil, No. 1 R.I.E., Capitan, Santa Barbara	5- 4-30	175	sd. sh. drlg.
T.-O. Oil, No. 2 Mdivani, S. B. Mesa, Santa Barbara	28- 4-27	1,445	O.S. drlg.
Ciaran Oil, No. 1 Hardison, Sespe, Ventura	22- 4-20	2,560	sd. sh. drlg.
Merchants Pet., No. 8 Hillside, Sespe, Ventura	1- 4-20	1,580	O.S. drlg.
Ivers, H. A., No. 14 Kentuck, Sespe, Ventura	1- 4-20	540	sd. sh. drlg.
Speik Oil, No. 2 Speik, Sespe, Ventura	33- 5-19	3,635	cleaning out
St. Louis Oil, No. 1 Williamson, Sespe, Ventura	1- 4-20	1,994	pump 70 b.d.
Section 20 Oil, No. 1 Sespe, Ventura	20- 5-19	2,420	sd. sh. drlg.
Texas Co., No. 136 Shiells, Shiells Canyon, Ventura	4- 3-19	2,390	sd. sh. drlg.
Continental Oil, No. 10 Grubb, S. Miguelito, Ventura	24- 3-24	4,597	sd. sh. drlg.
Ridge Oil, No. 1 Fox, Padre Canyon, Ventura	9- 3-24	8,000	dry; abd.
Tide Water A. O., No. 36 V.L.W., Ventura Ave., Vent.	25- 3-23	9,297	O.S. drlg.
Tide Water A. O., No. 40 V.L.W., Ventura Ave., Vent.	25- 3-23	6,196	sd. sh. drlg.
Tide Water A. O., No. 81 Lloyd, Ventura Ave., Vent.	27- 3-23	8,980	flow 1,620 b.d.
Tide Water A. O., No. 123 Lloyd, Ventura Ave., Vent.	27- 3-23	5,570	sd. sh. drlg.
Tide Water A. O., No. 128 Lloyd, Ventura Ave., Vent.	27- 3-23	8,828	hd. sh. drlg.
Tide Water A. O., No. 134 Lloyd, Ventura Ave., Vent.	27- 3-23	8,339	redrlg. 6,271
Tide Water A. O., No. 8 Hartman, Ventura Ave., Vent.	22- 3-23	3,194	sd. sh. drlg.
Shell Oil, No. 97 Taylor, Ventura Ave., Ventura	21- 3-23	8,598	sd. sh. drlg.
Shell Oil, No. 33 Edison, Ventura Ave., Ventura	28- 3-23	2,994	sd. sh. drlg.
Brit. Amer. Oil., No. 7 Bolsa, Ventura Ave., Ventura	22- 3-23	6,770	redrlg. 4,398
Alliance Pet., No. 3 Hisey, Ventura Ave., Ventura	21- 3-23	950	sd. sh. drlg.
Lloyd Corp., No. 2 Dabney, Ventura Ave., Ventura	23- 3-23	7,303	will deepen
Belridge Oil, No. 35-26-A, North Belridge, Kern	35-27-20	6,591	br. sh. drlg.
Belridge Oil, 26-25, North Belridge, Kern	26-27-20	8,135	O.S. drlg.
Belridge Oil, No. 26-39, North Belridge, Kern	26-27-20	2,283	sd. sh. drlg.
Belridge Oil, No. 28-2, North Belridge, Kern	28-27-20	6,080	br. sh. drlg.
Tide Water A. O., No. 23-3, North Belridge, Kern	22-27-20	4,245	sd. sh. drlg.
Tide Water A. O., No. 22-21, North Belridge, Kern	21-27-20	8,450	will deepen
Richfield Oil, No. 3, North Belridge, Kern	22-27-20	3,198	sd. sh. drlg.
Amerada Pet., No. 6 Beer, Blackwells Corner, Kern	21-26-19	1,276	sd. sh. drlg.
Emigrant Oil, No. 1 Den, Devil's Den, Kern	24-25-18	4,104	resume work
Shell Oil, No. 21 Freeman, Round Mountain, Kern	20-28-29	1,194	sd. sh. drlg.
Shell Oil, No. 1 S.P.L., South Round Mountain, Kern	7-29-30	3,509	dry; abd.
Helm & Smith, No. 11-A Kern, Kern River, Kern	34-28-28	677	rig to pump
Fuhrman, Alfred, No. 11-A Kern, Kern River, Kern	28-28-28	490	sd. sh. drlg.
Richfield Oil, No. 1, Union Avenue, Kern	5-30-28	8,746	reaming
Wood-Callahan Oil, No. 4 Community, Edison, Kern	21-30-29	3,860	gr. sd. drlg.
Texas Co., No. 35-1 KCL, Fruitvale, Kern	35-28-26	3,196	sd. sh. drlg.
West. Gulf Oil, No. 41-B, KCL, Fruitvale, Kern	22-29-27	3,740	O.S. drlg.
West Gulf Oil, No. 1 Ansolabehere, Fruitvale, Kern	14-29-27	2,916	O.S. drlg.
Renner, G. E., No. 2 R.H.L., Sivert, Kern	27-30-30	2,600	rig to pump
Hillview Oil, No. 1 Tejon, Caliente Creek, Kern	11-30-30	1,435	gr. sd. drlg.
Continental Oil, No. 4-A KCL, Wasco, Kern	8-27-24	5,996	sd. sh. drlg.
Standard Oil, No. 2 Mushrush, Wasco, Kern	7-27-24	7,780	sd. sh. drlg.
Cal. Lands, Inc., No. 1 Salisbury, Buttonwillow, Kern	7-29-24	11,160	sd. sh. drlg.
Union Oil, No. 7-34 KCL, Rio Bravo, Kern	34-28-25	11,515	flow 5,988 b.d.
General Pet., No. 3 Wagoner, Rio Bravo, Kern	35-28-25	11,480	flow 3,926 b.d.
General Pet., No. 3 Van Ness, Rio Bravo, Kern	2-29-25	9,297	sd. sh. drlg.
Standard Oil, No. 2 Fleishauer, Greeley, Kern	20-29-26	11,598	C. O. 11,551
Standard Oil, No. 11-16 KCL, Greeley, Kern	20-29-26	9,340	sd. sh. drlg.
Standard Oil, No. 11-17 KCL, Greeley, Kern	18-29-26	2,080	sd. sh. drlg.
Standard Oil, No. 12-6 KCL, Greeley, Kern	30-29-26	2,498	sd. sh. drlg.
Standard Oil, No. 1 Ross, Greeley, Kern	20-29-26	8,109	rigging up
Standard Oil, No. 1 Elrich, Greeley, Kern	20-29-26	10,630	br. sh. drlg.
Superior Oil, No. 12 KCL, Greeley, Kern	3-30-26	10,580	sd. sh. drlg.
Shell Oil, No. 81-29-B KCL, Ten Section, Kern	29-30-26	8,140	sd. sh. drlg.
Shell Oil, No. 34-14-A KCL, Canal, Kern	14-30-25	8,521	P.B. 8,425
Shell Oil, No. 87-4-B KCL, Canal, Kern	4-30-25	10,774	sd. sh. drlg.
Ohio Oil, No. 10-E KCL, Canal, Kern	14-30-25	8,250	O.S. drlg.
Standard Oil, No. 1 Rio Bravo fee, Canal, Kern	12-30-25	8,280	O.S. drlg.
Ohio Oil, No. 2-F KCL, Coles Levee, Kern	10-31-25	5,190	sd. sh. drlg.
Wilbent Oil, No. 2 Royer, Midway-Sunset, Kern	7-11-23	4,443	tested wet
Standard Oil, No. 201-13-D, Midway-Sunset, Kern	13-32-24	3,235	pump water
Fried, Julius, No. 1 Fried, Midway-Sunset, Kern	34-32-24	5,035	recmtd. 3,100
Texas Co., No. 32 Midway, Midway-Sunset, Kern	32-32-24	1,583	sd. sh. drlg.
Standard Oil, No. 7-31 Western, McKittrick, Kern	7-30-22	2,050	rebldg. rig
Westco Pet., No. 1 West, McKittrick, Kern	34-30-22	4,002	br. sh. drlg.
Hall-Baker Co., No. 1 Williams, McKittrick, Kern	2-30-21	1,341	1,000,000 c.f.g.
Richfield Oil, No. 1 KCL, Wheeler Ridge, Kern	28-11-20	9,272	P.B. 8,765
Tide Water A. O., No. 2 S.P., Tejon Ranch, Kern	15-11-19	6,641	sd. sh. drlg.
Proressive Oil, No. 3 East Coalinga, Fresno	20-19-15	660	sd. sh. drlg.
General Pet., No. 102 Esperanza, Coalinga, Fresno	6-20-15	1,501	sd. sh. drlg.
Lytle, R. S., No. 37-7-F, East Coalinga, Fresno	7-20-16	6,651	br. sh. drlg.
Lytle, R. S., No. 71-18-F, East Coalinga, Fresno	18-20-16	7,003	br. sh. drlg.
Standard Oil, No. 71-13-C fee, East Coalinga, Fresno	13-20-15	733	sd. sh. drlg.
Standard Oil, No. 1-17-F fee, East Coalinga, Fresno	17-20-16	7,601	br. sh. drlg.
Superior Oil, No. 1 Cagle, East Coalinga, Fresno	6-20-16	7,142	O.S. drlg.
Stuart Oil, No. 1 Alcalde, Alcalde, Fresno	12-21-14	1,268	bl. sh. drlg.
Union Oil, No. 4 King, Kettleman North, Fresno	29-21-17	8,520	redrlg. 8,520
K.N.D.A., No. 54-24-H, Kettleman North, Fresno	24-21-16	9,225	fish D.P.
K.N.D.A., No. 6-16-Q, Kettleman North, Kings	16-22-18	7,003	hd. sd. drlg.
K.N.D.A., No. 65-20-Q, Kettleman North, Kings	20-22-18	7,651	fish bit
K.N.D.A., No. 36-22-Q, Kettleman North, Kings	22-22-18	7,360	hd. sd. drlg.
K.N.D.A., No. 78-22-Q, Kettleman North, Kings	22-22-18	6,381	br. sh. drlg.
Standard Oil, No. 46-13-H, Kettleman North, Fresno	13-21-16	11,030	flow water
Standard Oil, No. 56-1-P, Kettleman North, Kings	1-22-17	5,959	reaming
Standard Oil, No. 76-7-Q, Kettleman North, Kings	7-22-18	5,793	br. sh. drlg.
Cal. Pet. Prod., No. 1 Irons, Cuyama, S. Louis Obispo	19-10-24	1,830	fish D.P.
Epco, Inc., No. 1 Ajax, Union, San Luis Obispo	27-26-13	3,694	gr. sd. drlg.
Arnold, V. F., No. 1 Yellow King, Ducor, Tulare	9-23-28	232	schist; abd.

IMPORTANT WELLS AND SOUTHERN CALIFORNIA WILDCATS

Company, well, location and county—	S.T.R.	Depth	Status
Antelope Valley Oil, No. 1 Palmdale, Los Angeles	17- 6-12	1,080	sd. sh. drlg.
Mojave Pet., No. 1 Hillside, Gorman, Los Angeles	5- 8-18	503	sd. sh. drlg.
Texas Co., No. 1 Anderson, Ocean Park, Los Angeles	17- 2-15	7,285	redrlg. 4,196
Rolling Hills Pet., No. 1 Weston, Palos Verdes, L. A.	27- 4-14	5,100	cmtd. 5,050
Bolling Oil, No. 1 Autry, Torrance, Los Angeles	23- 4-14	5,150	flow 125 b.d.
Cinco Oil, No. 1 Woodruff, Torrance, Los Angeles	23- 4-14	3,600	rigged up
H. D. Oil, No. 1 Lomita, Torrance, Los Angeles	23- 4-14	3,807	rigged up
Hart Pet., No. 1 Lomita, Torrance, Los Angeles	23- 4-14	5,127	flow 140 b.d.
Hunt. Signal Oil, No. 1 Clarke, Torrance, Los Angeles	23- 4-14	3,795	will deepen
Kirk, W. A., No. 5 Lomita, Torrance, Los Angeles	23- 4-14	5,098	redrlg. 4,790
Kovell Oil, No. 1 Deep Hole, Torrance, Los Angeles	23- 4-14	2,994	sd. sh. drlg.
Logan Pet., No. 1 Hadley, Torrance, Los Angeles	23- 4-14	5,145	C.P. 4,903
Lebow, C. H., No. 1 fee, Torrance, Los Angeles	23- 4-14	3,977	sd. sh. drlg.
Maldum Pet., No. 3 Lomita, Torrance, Los Angeles	23- 4-14	4,396	sd. sh. drlg.
Maldum Pet., No. 4 Lomita, Torrance, Los Angeles	23- 4-14	2,680	sd. sh. drlg.
McCaslin, W. E., No. 1 Lomita, Torrance, Los Angeles	23- 4-14	2,469	sd. sh. drlg.
Pacific West. Oil, No. 11 Marble, Torrance, L. A.	15- 4-14	4,952	pump 218 b.d.
Pettijohn, J. F., No. 1 Marilou, Torrance, L. Angeles	23- 4-14	5,150	pump 98 b.d.
Paso Oil, No. 1 Lyle, Torrance, Los Angeles	22- 4-14	5,128	flow 190 b.d.
Standard Oil, No. 1-2 Marble, Torrance, Los Angeles	15- 4-14	4,660	sd. sh. drlg.
Tiger Oil, No. 1 Lomita, Torrance, Los Angeles	23- 4-14	3,170	sd. sh. drlg.
Westside Oil, No. 3 Exeter, Torrance, Los Angeles	23- 4-14	4,596	sd. sh. drlg.
Wilson, Ray, No. 2 Lomita, Torrance, Los Angeles	23- 4-14	630	sd. sh. drlg.
Whit. S. F. S. Synd., No. 1 Lomita, Torrance, L. A.	23- 4-14	4,880	sd. sh. drlg.
West Basin Oil, No. 1 Eyster, Torrance, Los Angeles	23- 4-14	5,125	sd. sh. drlg.
C. C. M. O., No. 18, Torrance, Los Angeles	14- 4-14	5,010	cleaning out
C. C. M. O., No. 12 Kettler, Torrance, Los Angeles	14- 4-14	3,825	rigging up
D. & B. Oil, No. 3 Lomita, Harbor City, Los Angeles	25- 4-14	5,254	O.S. drlg.
General Pet., No. 1 Poggi, Harbor City, Los Angeles	25- 4-14	5,090	sd. sh. drlg.
Macrate, A. N., No. 2 Kupfer, Harbor City, L. Angeles	30- 4-13	5,246	flow 130 b.d.
O'Donnell, J. L., No. 44 Oakley, Harbor City, L. A.	30- 4-13	5,249	flow 255 b.d.
Sunset Oil, No. 2 Security, Harbor City, Los Angeles	25- 4-14	5,324	O.S. drlg.
Texas Co., No. 2 Oakley, Harbor City, Los Angeles	30- 4-13	5,240	flow 280 b.d.
Union Oil, No. 49 Heliman, Dominguez, Los Angeles	33- 3-13	8,942	fish D.P.
Shell Oil, No. 97 Reyes, Dominguez, Los Angeles	33- 3-13	7,170	sd. sh. drlg.
O'Donnell, J. L., No. 46 Mail, Rosecrans, Los Angeles	19- 3-13	7,750	cleaning out
Bankline Oil, No. 1 Kirby, Rosecrans, Los Angeles	20- 3-13	7,655	fish; abd.
Union Oil, No. 29 Rosecrans, Rosecrans, Los Angeles	19- 3-13	7,765	flow 1,520 b.d.
Union Oil, No. 30 Rosecrans, Rosecrans, Los Angeles	19- 3-13	7,660	sd. sh. drlg.

KEY TO ABBREVIATIONS USED IN DRILLING REPORTS

Abd., abandoned.
Acd., acidized.
B.O., barrels of oil.
B.P.D., barrels per day.
B.D., barrels daily.
B.P., back pressure.
B.R., building rig.
Br. sh., brown shale.
B.S., basic sediment.
C.&P., cellar and pits.
Cd. or Crd., cored.
C.D., corrected depth.
Cg., coring.
Cmtd., cemented.
C.O., cleaning out.
Comp., completed.
Compr., compressor.
C.P., casing pressure, also cement through perforations.
Csg., casing.
D.D., drilling (or drilled) deeper.
Drlg. or Drg., drilling.
Drk. or Dk., derrick.
D.S., drill stem.
D.&A., dry and abandoned.
Fsg., fishing.
Gbo., gumbo.
G.I., gas injection.
Gr., gravity.
Gr. sd., gray sand.
Grn. sh., green shale.
Hd. sd., hard sand.
H.F.W., hole full of water.
I.P., initial production.
L., lime.
L.D.D., later drilled deeper.
Lnr., liner.
Loc., location.
M.I.M., moving in material.
M.I.R., moving in rig.
M.I.R.T., moving in rotary tools.
M.O.T., milling on tools.
O.I.H., oil in hole.
O.S., oil sand.
O.T.D., old total depth.
O.W.D.D., old well drilling deeper.
O.W.P.B., old well plugging back.
P.B., plugging or plugged back.
P.B.P., pulling or pulled big pipe.
P.L., pipe line.
P.L.O., pipe line oil.
Pmpg., pumping.
P.O.P., putting on pump.
P.P., pulling pipe.
Rd. sd., red sand.
Rd. sh., red shale.
Recmt., recemented.
Rmg., reaming.
Redrlg., redrilling.
Rng., running.
R.O.G., rig on ground.
R.P., rock pressure.
R.U., rigging up.
R.U.R., rigging up rotary.
R.U.S.T., rigging up standard tools.
R.&T., rods and tubing.
S. or Sd., sand.
S.D., shut down.
Sdy. sh., sandy shale.
Sdtr., or St., sidetracking.
S.D.P.L., shut down for pipe line.
S.D.O., or S.D.W.O., shut down awaiting orders.
S.G., show gas.
Sh.&L., shale and lime.
S.I., shut in.
S.I.P., shut in, prorated.
S.L.M., steel line measurement.
S.O., show oil.
S.O.G.&W., show of oil, gas and water.
Spdg., or Spd., spudding.
S.R., straightreaming.
Stdg., standardizing (also standing).
S.W., salt water.
Swbg., swabbing.
T.A., temporarily abandoned.
Tbg., tubing.
T.D., total depth.
T.P., tubing pressure.
Tr., tract.
U.R., underreaming.
W.I.H., water in hole.
W.O., workover.
W.O.C. or W.O.C.S., waiting on cement to set.
W.P., working pressure.
W.S.O., water shutoff.
W.S.S.O.K., water shut off O.K.
W.S.R. or W.O.S.R., awaiting standard rig.
Wtr., water.

Universal Cons'd., No. 14 Trust, Rosecrans, L. A.	18-	3-13	7,590	O.S. drlg.
Isco Pet., No. 2 Abel, Rosecrans, Los Angeles	19-	3-13	2,277	sd. sh. drlg.
Superior Oil, No. 12 Maxwell, Rosecrans, Los Angeles	19-	3-13	8,852	P.B. 8,431
Hydrocarbon Prod., Inc., No. 1 Cole, Rosecrans, L. A.	19-	3-13	7,750	cleaning out
Hydrocarbon Prod., Inc., No. 1 Duchess, Rose., L. A.	19-	3-13	7,815	O.S. drlg.
Royalty Ser. Corp., No. 3 Gordon, Rosecrans, L. A.	19-	3-13	7,835	O.S. drlg.
Basin Oil, No. 3 Club, Potrero, Los Angeles	34-	2-14	3,688	flow 210 b.d.
Barnsdall Oil, No. 5 R.S.F., Newhall, Los Angeles	26-	4-17	953	sd. sh. drlg.
Mojave Pet., No. 2 Jennings, Newhall, Los Angeles	33-	5-14	490	sd. sh. drlg.
Mangrum & Page, No. 1 Lintz, Newhall, Los Angeles	4-	3-15	204	sd. sh. drlg.
O'Donnell, J. L., No. 1 Hammond, Newhall, L. A.	8-	3-16	4,305	idle
General Pet., No. 33 Harbor, Wilmington, L. Angeles	2-	5-13	3,925	flow 1,008 b.d.
General Pet., No. 37 Harbor, Wilmington, L. Angeles	2-	5-13	3,494	O.S. drlg.
Allied Pet., No. 30 Harbor, Wilmington, Los Angeles	35-	4-13	5,683	P.B. 3,341
Richfield Oil, No. 16 P.D., Wilmington, Los Angeles	2-	5-13	2,885	O.S. drlg.
Union Pacific R. R., No. 94, Wilmington, Los Angeles	4-	5-13	5,596	flow 140 b.d.
Union Pacific R. R., No. 97, Wilmington, Los Angeles	4-	5-13	3,381	scrape wall
Union Pacific R. R., No. 98, Wilmington, Los Angeles	4-	5-13	2,910	gravel pack
Union Pacific R. R., No. 12-E, Wilmington, L. Angeles	34-	4-13	2,576	sd. sh. drlg.
Grady, R. T., No. 1 Associates, San Pedro, Los Angeles	23-	5-14	614	cleaning out
Seacliff Pet., No. 1 Club, Montebello, Los Angeles	3-	2-12	715	circulating
Olympic Refining, No. 1 Smith, Montebello, L. A.	2-	2-12	6,640	sd. sh. drlg.
St. Helens Pet., No. 30 Monterey, Montebello, L. A.	2-	2-12	3,574	sd. sh. drlg.
St. Helens Pet., No. 4 Mulholland, Montebello, L. A.	2-	2-12	2,277	sd. sh. drlg.
Standard Oil, No. 2 Braun, Montebello, Los Angeles	2-	2-12	5,760	sd. sh. drlg.
Standard Oil, No. 4 Braun, Montebello, Los Angeles	2-	2-12	5,291	sd. sh. drlg.
Standard Oil, No. 5 Braun, Montebello, Los Angeles	2-	2-12	4,983	sd. sh. drlg.
Standard Oil, No. 2 Kaufman, Montebello, L. Angeles	2-	2-12	1,876	sd. sh. drlg.
Standard Oil, No. 4 Harvey, Montebello, Los Angeles	2-	2-12	3,273	sd. sh. drlg.
Standard Oil, No. 1 McDonald, Montebello, L. Angeles	2-	2-12	6,681	O.S. drlg.
Union Oil, No. 1 Calkins, Montebello, Los Angeles	2-	2-12	6,711	O.S. drlg.
Union Oil, No. 4 Howard & Smith, Montebello, L. A.	2-	2-12	6,344	sd. sh. drlg.
Union Oil, No. 30 LaMerced, Montebello, Los Angeles	1-	2-12	3,497	sd. sh. drlg.
Stanley Oil, No. 1 Mont., Montebello, Los Angeles	2-	2-12	2,592	sd. sh. drlg.
Pongratz Oil, No. 1 Newmark, Montebello, L. Angeles	3-	2-12	3,640	sd. sh. drlg.
McVicar & Rood, No. 3 Manz, Montebello, L. Angeles	2-	2-12	6,336	sd. sh. drlg.
Herley-Kelly, Inc., No. 2 Burke, Montebello, L. A.	2-	2-12	2,994	sd. sh. drlg.
West Mont. Oil, No. 2 Extension, Montebello, L. A.	2-	2-12	6,690	flow 740 b.d.
H. & C. Oil, No. 1 Joyce, Whittier, Los Angeles	22-	2-11	634	sd. sh. drlg.
Texas Co., No. 6 Baldwin, Santa Fe Springs, L. A.	6-	3-11	6,844	cmtd. 6,844
Massey & Asso., No. 1 Taylor, Long Beach, L. Angeles	19-	4-12	4,745	pump 120 b.d.
Parry & Co., No. 1 Associates, Long Beach, L. A.	29-	4-12	5,670	idle
Texas Co., No. 1-13-A Smith, Anaheim, Orange	8-	4-10	6,750	sd. sh. drlg.
Brea Canyon Oil, No. 49 Brea, Brea Canyon, Orange	2-	3-10	3,881	sd. sh. drlg.
Shell Oil, No. 20 Orange, Brea Canyon, Orange	2-	3-10	7,550	sd. sh. drlg.
Battersby, J. M., No. 1 Associates, Carmenita, Orange	21-	3-11	8,950	fish swab
Goodrich Oil, No. 1 Paige, Richfield, Orange	22-	3- 9	3,160	reaming
Southwest Expl., No. 5 State, Hunt. Beach, Orange	10-	6-11	3,617	sd. sh. drlg.
Southwest Expl., No. 6 State, Hunt. Beach, Orange	10-	6-11	3,294	sd. sh. drlg.
Southwest Expl., No. 14 State, Hunt. Beach, Orange	10-	6-11	2,190	sd. sh. drlg.
Shell Oil, No. 2 Irvine, Corona Del Mar, Orange	6-	7- 9	1,899	sd. sh. drlg.
Dauphin Dev., No. 1 Irwin, Ponto, San Diego	16-12-		4 806	fish D.P.
Palm City Oil, No. 1 Palm City, San Diego	21-18-		2 181	sd. sh. drlg.
So. Count. Pet., No. 1 Serranos, San Bernardino	22-	2-	8 2,820	sd. sh. drlg.

KANSAS

Week Ending January 14 (Descriptions are East unless marked otherwise)

Barton County

Amerada Pet. Co. No. 1 Kruckenberger, C NE NE Sec. 14-19-15w. Lans. 3,260 ft.; Arb. 3,572 ft.; S.S.O.; R.U.S.T. 3,585 ft.

Long & Johnson No. 1 Eveleigh, SW SW NE Sec. 3-18-14w. Lansing 3,100 ft.; Arb. 3,338 ft.; 2,000 ft. O.I.H.; set 5-in. 3,342 ft.

I. W. Murfin No. 1 Birzer, NE SW Sec. 21-19-11w. S.D. 2,250 ft.

Sinclair Prairie No. 1-A Pichner, NE SE SE Sec. 10-16-11w. Drlg. 2,085 ft.

Butler County

Bowland & McCoy No. 1 Frankson, SE SW Sec. 2-29-6. Drlg. 165 ft.

Higgens & Pierce No. 1-A Shrieves, NE NW SE Sec. 2-26-4. U.R. 1,000 ft.

Simpson & Estes No. 1 Farm. SE NE NE Sec. 30-27-7. Miss. 2,784-91 ft.; drlg. 3,045 ft.; S.S.O.

Cowley County

Barnsdall No. 1 Snodgrass, NW SE Sec. 36-30-6. Drlg. 1,725 ft.

Brewer & Blair No. 1 Miller, NE NW NE Sec. 13-32-5. Drlg. 1,215 ft.

Ben Graiapp et al No. 1-A Clark, NW NW NE Sec. 11-31-3e. Drld. cmt. and P.B. 3,000 ft.

Phillips Pet. Co. No. 1 Bernard, SE SE NE Sec. 19-33-6. Drlg. 480 ft.

C. I. Ross No. 1 Backus, SE SE NE Sec. 31-30-3. Drlg. 175 ft.

Dickinson County

Franks et al No. 1 Huffman, NW NW SW Sec. 11-13-1. Drlg. 1,730 ft.

Ellis County

Bridgeport No. 1 Froelich, CWL SW Sec. 34-12-16w. Drlg. 675 ft.

C. L. Carlock No. 1 Philip, SE SW NE Sec. 10-15-17w. U.R. 2,775 ft.

Darby Pet. No. 1 Peavey, NW NW NE Sec. 24-11-18w. T.D. 3,456 ft.; swb. 110 B.O. in 15 hrs.

Graham County

Continental Oil Co. No. 1 Drumm Comm. Co., SE SE NE Sec. 16-9-21w. Drlg. 1,504 ft.

Continental Oil Co. No. 1 Putnam Inv. Co., CWL SW Sec. 3-9-21w. Drlg. 3,050 ft.

Greenwood County

Hancock et al No. 1 Rousch, C S½ SE NW Sec. 8-28-13. T.D. 1,530 ft.; S.D.

H. L. Turner No. 1 Black, SE NE NW Sec. 3-27-13. Fsg. 1,895 ft.

Harvey County

Lanahan Drlg. Co. No. 1 Lagree, SE SE Sec. 4-23-3w. T.D. 280 ft.; S.D.

Kingman County

Duwe & Farris No. 1 Kimminau, NE NW SW Sec. 12-30-9w. Set pkr. 4,450 ft.; shot 4,265-95 ft.; S.G.

McPherson County

Marylyn Oil No. 1 Dixon, NW NE NW Sec. 7-19-2w. T.D. 3,018 ft.; F. 22 B.O. in 24 hrs.

Marion County

Cox & McGinnis and Saco Oil Co. No. 1 Jolliffe, C S½ SW SE Sec. 2-22-5 S.D. 2,650 ft.

Johnson et al No. 1-A Miltz, SW SW SW Sec. 24-17-4. T.D. 2,380 ft.; 300 ft. O. I.H.; no test.

Mead County

Pacific Midwest Oil No. 1 Rexford, NE SE SW Sec. 8-30-29w. S.D. 1,435 ft.

Osage County

J. M. Edwards No. 1 Detrick (O.W.D.D.), C NW SE Sec. 21-14-15. O.T.D. 1,200 ft.; S.D. 1,200 ft.

Ottawa County

Babcock Oil No. 1 Copeman, NW NW Sec. 18-10-2w. Miss. 2,835 ft.; H.F.W. 3,302-10 ft.; drlg. 3,395 ft.

Pratt County

Champlin Ref. Co. No. 1 Elliott, SW NE Sec. 26-27-14w. Fsg. 4,857 ft.

Rice County

Cities Service No. 1 DeWitt, CSL NE Sec. 33-19-9w. C.O. 2,877 ft.

Frank Hollow No. 1 Hohl Est., NW NE Sec. 3-18-10w. Drlg. 2,520 ft.

Spurrier & Bruce No. 1 Cary, NE NW NW Sec. 30-18-8w. O.W.D.D.; O.T.D. 1,530 ft.; S.D. 1,680 ft.

J. H. Tatlock No. 1 L. C. Proffitt, SW SE SW Sec. 12-20-10w. Lansing 3,025 ft.; Arb. 3,327-3,335 ft., T.D.; P. 99 B.O. in 8 hrs.; considerable wtr.

Rooks County

Phillips Pet. Co. No. 1 Tanzey, C NW SW Sec. 25-9-18w. Arb. 3,418-3,423 ft. T.D. 3,424 ft.; acd. and swb. 21 B.F

Producers No. 1 Ham (O.W.D.D.), SW SW NW Sec. 25-7-19w. O.T.D. 1,800 ft.; Lans. 3,043 ft.; S.D. 3,045 ft.

Russell County

K. F. Nelson No. 1 Polcyn, SW Sec. 31-13-15w. H.F.W. 3,389-91 ft.; T.D. 3,393 ft.

Phil-Han No. 1 Weimeister, SW Sec. 13-14-13w. Top pay 2,655 ft.; perf. and acd. and swb. ½ B.O.P.H.; to P.B.

R. H. Shields No. 1-A Gross, CSL SW SE Sec. 5-15-13w. C.O. 2,422 ft.

Earl Wakefield No. 1 Meharg, SE SE SE Sec. 16-15-13w. Top pay 3,099 ft.; T.D. 3,112 ft.; drld. plug and rec. 2,200 ft. O.I.H.

Saline County

Central States Oil Co. No. 1 Crawford, NW SW NE Sec. 26-13-3w. Drlg. 1,100 ft

Stafford County

Stanolind O. & G. Co. No. 1 Curtis, SE cor. Sec. 31-21-12w. Viola 3,544 ft.; Arb. 3,638 ft.; R.U.S.T. 3,640 ft.

Virginia Drlg. Co. No. 1 Schlockter-meyer, SE NW Sec. 7-21-11w. S.D. 247 ft.

Sedgwick County

Century Pet. Co. No. 1 Wilke, SW SE SW Sec. 1-29-2. Drlg. 128 ft.

Frank Hudson et al No. 1 Fulton, NE SE Sec. 35-28-1e. U.R. 2,356 ft.

Sumner County

Earl Henderson No. 1 King, NE NE NE Sec. 22-31-4. Miss. 3,038 ft.; T.D. 3,041 ft.; N.S.; D.&A.

Wabaunsee County

Fowler & Tague et al No. 1 Aye, NW SW NW Sec. 10-12-8. S.D. 300 ft.

Woodson County

Klapton et al No. 1 Poston, NE NE SE Sec. 31-26-14. Miss. 1,507 ft.; T.D. 1,525 ft.; D.&A.

M. J. Trott No. 1 Abbott, NW NE NE Sec. 21-25-14e. Drlg. 1,325 ft.

OKLAHOMA

Week Ending January 14

NORTHERN OKLAHOMA

Caddo County

Texas Co. No. 1 Smith, C NE NW Sec. 2-5-12w. T.D. 2,556 ft.; S.D.O.

Cleveland County

Burke-Greis No. 1 Alberta, SE SW NW Sec. 19-7-1w. Drlg. 6,752 ft.

Harner, Turner et al No. 1 Taylor, SE NE NW Sec. 23-8-2w. Fsg. D.P. 7,079 ft.

Nels-Burrton No. 1 Hirsch, NW NW NE Sec. 17-9-2w. O.W.P.B.; O.T.D. 7,692 ft.; T.D. 7,695 ft.; S.S.O. and wtr.

Garfield County

Champlin Ref. Co. No. 1 Allen, SE SE SE Sec. 26-24-8w. Drlg. 4,920 ft.

Hughes Drlg. Co. No. 1 Meisner, C NE NW Sec. 10-20-4w. Drlg. 4,517 ft.

Jones Assoc. No. 1 Wolfe, SE SW NW Sec. 13-22-4w. Drlg. 4,200 ft.

Garvin County

H. R. Hollenbach et al No. 1 Butterly, SE NE SE Sec. 22-1n-1e. 3,218,000 ft. gas; drlg. 3,205 ft.; S.D.; repairs.

Grady County

Carter Oil Co. et al No. 1 Smith C-58, C SE SW Sec. 26-5-8w. S.S.O. 5,329-56 ft.; S.O. 5,433 ft.; cd. 5,964-76 ft.; rec. sh.; cd. 6,351-76 ft.; rec. hd. sd.; T.D. 6,613 ft.; set 9-in. csg. 6,602 ft.; W. O.C.

Hughes County

Homer Doup et al No. 1 Bond, NE NE SW Sec. 7-7-9. S.D. 3,098 ft

Phillips Pet. Co. No. 1 Mandier, SE SW SW Sec. 1-6-10. Viola 5,357 ft.; dolo. 5,435 ft.; dolo. 5,510 ft.; Arb. 6,105 ft.; drlg. 6,150 ft.

Jackson County

Lippert No. 1 Howard, NE SW NW Sec. 10-3-19w; O.W.D.D. T.D. 1,675 ft.

Kay County

Crawford No. 1 Boehl, SE SE NW Sec. 34-27-2w. T.D. 1,040 ft.; fsg.

C. C. Nye No. 1 Wolfenbarger, SW NW SW Sec. 16-27-4. T.D. 3,201 ft., sd.

Kaw Oil Co. No. 1 Wolfenbarger, NW NW SE Sec. 9-27-4. T.D. 60 ft.; S.D.; rprs.

Kingfisher County

Burton Pet. Corp. No. 1 Zerger, C SE SW Sec. 5-18-6w. S.D. at 3,510 ft.; lost cones; T.A.

Ace Gutowsky No. 1 Lankford, NE NE SE Sec. 34-17-6w. Drlg. 3,980 ft.

Kiowa County

Crawford & Zelliff No. 1 Kimray, SW SW NW Sec. 36-5-18w. S.D. 354 ft.

R. L. Emerson No. 1 Handcock, SE SE NE Sec. 26-6-15w. S.D. 520 ft.

Lincoln County

Fields & Nagle No. 1 Black, SE SE SE Sec. 31-16-6; O.W.D.D. T.D. 3,980 ft.; F. 20 B.O.P.D.

Muskogee County

Heydrick No. 1 Paschall, NE SE NW Sec. 22-13-19. S.D. 1,446 ft.

Okfuskee County

Carter & Hight No. 1 Rogers, SW SW SW Sec. 6-13-8. W.O.C. 616 ft.

Mead Prod. Co. No. 1 Pine, SW SW NW Sec. 14-12-11. S.O. 3,462-68 ft.; H.F.W at 3,473 ft.; D.&A.

Okmulgee County

Jim Wise Drlg. Co. No. 1 Morrow, SW NW NE Sec. 16-15-13. S.D. 400 ft.

Payne County

Comail Oil Co. No. 1 Curran, SE SE SE Sec. 21-19-6. Drlg. 640 ft.

Starr O. & G. Co. No. 1 Georgia SE SW NE Sec. 35-18-4. 1st Wlx. 4,051 ft.; 2d 4,083 ft.; T.D. 4,123 ft.; rng. csg. to test upper formation.

Pawnee County

Ed Kelly No. 1 Hill, SW SW SE Sec. 1-21-5. U.R. 1,310 ft., T.D.

Pittsburg County

Phillips Pet. Co. No. 1 Hubacker, C NW NE Sec. 11-7-5. Drlg. 396 ft.

Supreme Oil Corp. No. 1 Hickey, NW SW NW Sec. 4-2-15. T.D. 1,040 ft.; abd.

Supreme Oil Corp. No. 1 Stevenson, SW SW SE Sec. 27-3-14. T.D. 1,300 ft.; abd.

Pontotoc County

J. L. Casey No. 1 Pace, SW SW NE Sec 14-2-7. Drlg. 1,297 ft.

H. Z. Moore No. 1 Payne, SE NW SE Sec. 16-4-4. T.D. 997 ft.; S.S.O.; S.D

Union Dev. Co. No. 1-A Abbott, SW NW NE Sec. 34-3-6. S.D. 4,100 ft.

Pottawatomie County

Wood Oil Co. No. 1 Peters, SW SE NW Sec. 28-8-4. Fsg. D.P. 4,118 ft.

Seminole County

Atlantic Ref. Co. No. 1 Atkinson, NW NW SW Sec. 17-6-6. Cd. 2,890-98 ft. and rec. sd.&sh.; cg. ahead.

Lesslie Rogers No. 1 Kidd, NE SW SE Sec. 33-10-8. T.D. 200 ft.; S.D.

H. S. Mass No. 1 Leachman, C N½ SE NE Sec. 34-10-6. Drlg.

W. C. Wood No. 1 Aldridge, SW NW NE Sec. 5-8-8. Drlg. 1,900 ft.

Sequoyah County

Thompson Brs. No. 1 Ruby, NW NW NE Sec. 30-12-22. S.D. 100 ft.

Stephens County

Phillips Pet. Co. No. 1 Culbertson, NW NW SE Sec. 4-1-5w. Gas sd. 3,460-63 ft.; T.D. 3,473 ft.; S.D.

Texas County

Republic Nat. Gas Co. No. 1 Dulabohn, C Sec. 21-6n-15ecm. Drlg. 2,365 ft

Republic Nat. Gas Co. No. 1 Judd, CSL SW Sec. 24-6n-15ecm. T.D. 2,870 ft.; gas 7,100,000 ft.

Washita County

Continental Oil Co. No. 1 Proctor C NW Sec. 28-10-20w. Rmg. at 8,947 ft.; T.D. 10,195 ft.

L. B. McWhirter No. 1 fee, NW SW SW Sec. 34-8-19w. T.D. 2,190 ft.; fsg.

SOUTHERN OKLAHOMA

Carter County

Pure Oil Co. No. 1 Noble, NE SE Sec. 35-3s-1e. Drlg. 4,272 ft.

Choctaw County

Clyde Ross et al No. 1 Hardy, SE SE NW Sec. 21-7s-15. T.D. 1,519 ft., sd.; rec. some oil; set 7-in. csg. 1,513 ft.

Jefferson County

Bredwell Oil No. 1-I Seay, SE NE SW Sec. 29-6s-5w. Drlg. 1,453 ft.

H. W. Weir No. 1 Carmichael, NE NE SW Sec. 23-7s-7w. Drlg. 102 ft.

Marshall County

Hughes et al No. 1 Vittitto, C NE SE Sec. 11-5s-4e. O.W.D.D.; O.T.D. 7,100 ft.; fsg. csg.

Tillman County

Smith No. 2 Hammel, NE NW NW Sec. 6-5s-15w. T.D. 2,380 ft.; recvd. D.P. and S.D.

ARKANSAS

Calhoun County

J. E. Murdock No. 1 Southern Craft Top Nac. 2,372 ft.; top Tokio 2,920 ft.; S.D. 3,291 ft.; M.I. fuel to dpn.

Corp., SE cor. NW NW Sec. 17-14-13.

Columbia County

Atlantic Ref. Co. No. 1 Barnette, C SW

SE Sec. 14-17-20. 10¾-in. csg. 2,250 ft.; drlg. rd. sh.&strks. L. 7,214 ft.

W. L. Goldston No. 1 A. C. Garrett, C SE SW Sec. 13-17-20. Set 16-in. 134 ft.; W.O.C. 140 ft.

Normandie Oil Corp. No. 1 L. Garrett, C NE NE Sec. 23-17-20. 9⅝-in. csg. 2,230 ft.; T.C.V. 5,375 ft.; T. Smkvr. 7,306 ft.; T. dense L. 7,328 ft.; cd. 7,344-64 ft.; T. por. L. 7,354 ft.; drld. to 7,405 ft.; cd. 7,405-7,523 ft.; soft oolitic L.; drld. 7,523-45 ft.; set 5½-in. 7,505 ft.; comp.; 19 B.P.H.; ¼-in. ck.; T.P. 1,200 lbs.; C.P. 1,450 lbs.; T.D. 7,545 ft.

Pet. Finance Co. No. 1 Garrett, C SW SW Sec. 13-17-20. M.I. rig.

Southwood Oil Co., Inc., No. 1 J. O Hutcheson, C NE SW Sec. 14-17-20. Drlg. ch. 2,130 ft.

Standard Oil Co. of La. No. 3 Crone, SW cor. NE SW Sec. 8-16-22. Drlg. sh.& strks. shells 3,865 ft.

Standard Oil Co. of La. No. 1 Lewis Unit, SE cor. NW NE Sec. 15-17-19. Drlg. sd.&sh. 5,362 ft.

Standard Oil Co. of La. No. 1 Minnie Harris, NE cor. NE SW Sec. 15-17-19. Drlg.

Craighead County

Tannark, Inc., No. 1 Ruby M. Martin, 580 ft. NL, 80 ft. EL, Sec. 35-14n-3e. Fsg. for bit 1,735 ft.

Hot Spring County

John H. James No. 1 Sturgess Lbr. Co., SW cor. SW SE Sec. 24-6-18. 10-in. csg. 58 ft.; drlg. sd. rk. 628 ft.

Lafayette County

Shell Pet. Corp. and Ohio Oil Co. No. 1 Warren, C SE SE Sec. 13-16-24. 13⅜-in. 194 ft.; 9⅝-in. 2,272 ft.; T. Bknr. 6,920 ft.; D.S.T. 7,169-7,228 ft.; shwd. S.W. and oil; tstg.; T.D. 7,228 ft.

Wadley-Erwin et al No. 1 G. W. Taylor, C NE SW Sec. 15-19-26. 13⅜-in. csg. 447 ft.; T. anhy. 5,322 ft.; drlg. L.&rd. sh. 5,360 ft.

Lincoln County

Fitzwater, Inc., No. 1 Owens, Sec. 26-9s-8w. D.&A.; sdy. sh. 1,132 ft.

Little River County

Barbee et al No. 1 Ada Mills, SE cor. SW NW Sec. 18-12-29. R.U.

C. & M. Drlg. Co. No. 1 Strawn, SW cor. SE Sec. 20-10-32. S.D. 1,170 ft. hd. sd

Harford Oil Corp. No. 1 Pinning, C NE NE SW Sec. 6-13-30. S.D.; W.O. 1,925 ft.

Joe G. Strahan et al No. 2 Dierks Lbr. Co., Sec. 21-12-28. S.D. 3,661 ft.

Lonoke County

J. W. Eddington No. 1 Anderson. S.D. 900 ft.

Lonoke-Prairie Dev. Co. No. 1 T. Young, C NW NW Sec. 8-3n-7w. D.S. stuck 736 ft.

Miller County—Rodessa

Gulf Ref. Co. No. 5 Johnson, SW cor. Sec. 29-15-15. R.U.

F. W. Martin No. 1 Watson et al, SW cor. NW SE Sec. 2-20-28. Drlg. sh.&L. 6,050 ft.

F. W. Martin No. 2-A Watts, 335 ft. E, 330 ft. N, SW cor. SW NE Sec. 2-20-28. Loc.

F. W. Martin Drlg. Co. No. 1-B Watts, C S NW NW Sec. 1-20-28. Por. L. 6,273-6,304 ft.; S.W. with light stain and odor oil; D.S.T. 6,270-6,304 ft.; rec. 3,000 ft. S.W.; D.&A.

Normandie Oil Co. No. 1 Watson, 330 ft. S and E, C Sec. 2-20-28. Drlg. sh.&L. 3,200 ft.

Mrs. S. O. Thompson No. 1 Gen. Am. Life Ins. Co., SE cor. SE SW Sec. 20-14-26. Cd. 3,657 ft.; slightly por. sdy. L.; D.S. stk.; T.D. 3,825 ft.; D.S.T. 3,677-95 ft.; tstd. 15 thribbles S.W.; 8 min.; S.D.; W.O.; 3,851 ft.

Mississippi County

Benedum & Trees Oil Co. No. 1 Mack, 330 ft. SW cor. NW SW Sec. 2-15n-12e. Top Nac. 2,160 ft.; set 7-in. csg. 2,897 ft.; drlg. hd. gry. L. 3,762 ft.

Nevada County

Benedum & Trees Oil Co. No. 1 T. Erby, SW cor. SW SW Sec. 3-14-20. M.I.R.

C. D. & F. Pet. Co. No. 1 P. T. Grayson, SW cor. NW SE Sec. 4-14-20. Tokio sd.; D.S.T. 2,098-2,102 ft.; 10 min.; rec. 200 ft. oil and mud; open ck.; arng. set csg. 2,102 ft.

Texas Canadian Oil Co. No. 3 Stocks, C SW NE Sec. 9-15-22. 10-in. csg. 20 ft.; 7-in. csg. 1,341 ft.; T. Nac. 1,183 ft.; ripped csg. 1,204 ft.; bld. S.W.; W.O.C.

Ouachita County

Deep Rock Oil Corp. No. 1 C. Wesson, SE cor. NE Sec. 23-15-19. Set 13-in. csg. 350 ft.; drlg. sh. 603 ft.

Union County—Schuler

E. M. Jones No. 1 J. C. Morgan, SE NW Sec. 13-18-18. Set 16-in. 144 ft. and 10¾-in. csg. 2,154 ft.; drlg. rd.&gr. sh. 4,935 ft.

E. M. Jones No. 2 J. C. Morgan, SE cor. NE NW Sec. 13-18-18. 10¾-in. csg. 2,151 ft.; fsg. 2,160 ft.

Lion Oil Ref. Co. No. 3 Edna, SE cor. NE NE Sec. 18-18-17. T. Jones sd. 7,574 ft.; 7-in. csg. 7,661 ft.; T.D. 7,675 ft.

Lion Oil Ref. Co. No. 2 Henry, C N SE SE Sec. 12-18-18. R.U.

Lion Oil Ref. Co. No. 6 Marcus, C Lot 3, SW Sec. 18-18-17. Set 16-in. csg. 114 ft.; 10¾-in. csg. 1,950 ft.; T. L. 7,625 ft.; T. Reynolds L. 7,633 ft.; T.D. 7,735 ft.; 7-in. csg. 7,721 ft.; W.O.C.

Lion Oil Ref. Co. No. 3 Sewell, NE cor. Lot 4, NW Sec. 18-18-17. 10¾-in. csg. 1,955 ft.; T. L. 7,641 ft.; T. Jones sd. 7,548 ft.; rmg. to bttm. 7,704 ft.

C. H. Murphy et al No. 2 fee, NW cor. SW SE Sec. 13-18-18. Drlg. rd. sdy. sh. 7,167 ft.

Phillips Pet. Co. No. 1 Amanda, SE cor. NE SE Sec. 12-18-18. T.D. 6,747 ft.; fsg. 2 jts. D.P.

Phillips Pet. Co. No. 2 Amanda, NE cor. NE SE Sec. 12-18-18. 10¾-in. csg. 2,068 ft.; T. Jones sd. 7,563 ft.; cd. 7,564-7,634 ft.; T.D. 7,725 ft.

Phillips Pet. Co. No. 2 Brian, C S½ NE SE Sec. 13-18-18. 10¾-in. 2,077 ft.; T. Jones sd. 7,519 ft.; T. L. 7,628 ft.; T.D. 7,700 ft.; set 7-in. csg. 7,676 ft.; W.O.C.

Phillips Pet. Co. No. 3 Brian. NW SE Sec. 13-18-18. 16-in. csg. 191 ft.; T. Jones sd. 7,555 ft.; set 7-in. csg. 7,698 ft.; T.D. 7,725 ft.; comp.; 259 B.P.D.; ¼-in. ck.; T.P. 200 lbs.; C.P. 925 lbs.; perf. 7,570-7,601 ft.

Phillips Pet. Co. No. 2 El Dorado, NW cor. NW SE Sec. 12-18-18. Set 7-in. csg. 7,733 ft.; T.D. 7,755 ft.; W.O.C.

Phillips Pet. Co. No. 2 Miller. C N¼ Lot 4, SW Sec. 18-18-17. T.D. 7,680 ft.; 7-in. csg. 7,755 ft.; T.D. 7,780 ft.; comp. 275 B.P.D.; ¼-in. ck.; T.P. 700 lbs.; C.P. 2,100 lbs.; perf. 7,648-54 ft.

Phillips Pet. Co. No. 6 Sewell, NE cor. Lot 3, SW Sec. 7-18-18. 10¾-in. 2,071 ft.; T. Jones sd. 7,603 ft.; T.D. 7,765 ft.; rng. 7-in. csg.

Phillips Pet. Co. No. 7 Sewell, NE cor. Lot 4, SW Sec. 7-18-18. T.D. 7,615 ft.; rmg. to bttm.; to core ahead.

Phillips Pet. Co. No. 8 Sewell, SE cor. Lot 4, SW Sec. 7-18-18. T. Jones sd. 7,566 ft.; set 7-in. csg.; T.D. 7,750 ft.

Phillips Pet. Co. No. 1 J. E. Shatford, SW cor. NW NW Sec. 17-18-17. 10¾-in. csg. 2,073 ft.; T. Jones sd. 7,570 ft.; T.D. 7,700 ft.; D.&A.

Roberts & Murphy No. 3 Leona, NW cor. Lot 6, SW Sec. 7-18-17. Drlg. 2,339 ft.

Union County—Other

Ark. Southern Oil Corp. No. 3-A Simmons, NW cor. NE NW Sec. 15-18-13. O.W.D.D. Drlg. gr. sdy. sh. 2,754 ft.

J. R. Lockhart No. 1 P. W. Gaddy, NE cor. NW NW Sec. 13-17-14. Cg. 3,005 ft.

J. R. Lockhart No. 1-A Raulston, NE cor. SW SE Sec. 12-17-14. D.S.T. 3,007-37 ft.; ¼-in. B. and ½-in. T cks.; W.P. 100 lbs.; 3 min.; W.P. 210 lbs.; 9 min.; rec. drlg. mud and cut oil; rng. 7-in. csg. 3,037 ft.; tstd. S.W.; W.O.

J. R. Lockhart No. 3 Raulston, SE cor. NE SE Sec. 12-17-14. 10-in. csg. 105 ft.; W.O.C.

Mullins & Brooks et al No. 1 Nash, 500 ft. N and 338 ft. W of SE cor. NW SE Sec. 7-17-13. 10-in. csg. 148 ft.; D.S.T. 3,037-52 ft.; rec. 250 ft. oil and 30 ft. S.W.; 14-min.; W.P. 4 lbs.; top pay 3,232 ft.; 5½-in. 3,100 ft.; drld. out to 3,069 ft.; perf. 3,022-44 ft.; wsg. to test.

Mullins, Brooks et al No. 2 Nash, NE cor. NE SW Sec. 7-17-13. 10-in. 148 ft.

Sloan Wells, Tr., No. 4 G. J. Childs, 150 ft. NW cor. NE SW Sec. 8-16-16. O.W. W.O.; O.T.D. 2,656 ft.; S.D.; W.O.

ALABAMA

Barbour County

H. A. Stebbinger et al No. 1 Mrs. Alyce Robertson, C NE NE Sec. 19-10n-25e. Drlg. sdy. sh. 2,748 ft.

NORTH MISSISSIPPI

Calhoun County

L. C. Lucas No. 1 E. C. Boland, 400 ft. E and 500 ft. S, NW cor. SW Sec. 9-22n-9e. S.D. 791 ft.

Clarke County

Jeremiah L. Ryan et al No. 1 M. Eddins, 500 ft. SE cor. Sec. 29-2n-14e. S.D. 290 ft.

Hinds County

G. Jefferys No. 1 Gaddis Farms, Inc., NW cor. SE Sec. 26-7n-4w. S.D. 3,448 ft.

Cleve Love et al No. 1 S. F. Johnson, NE cor. Sec. 29-6n-1w. S.D. 5,218 ft. sd.; arng. D.D.

Montgomery County

Dr. T. H. Chichester No. 1 Mitchell, Sec. 36-20n-7e. Drk.

Pontotoc County

Waldrop et al No. 1 Bray, Sec. 17-11s-1e. S.D. 310 ft.

Rankin County

Urban B. Hughes, Tr., No. 1 Love Pet Co., 330 ft. SE cor. NW NE Sec. 1-5n-1e. Set 8⅝-in. csg. 758 ft.; 5½-in. csg. 2,348 ft.; comp.; est. 40,000,000 cu. ft. gas; T.D. 2,367 ft.

Simpson County

Cleve Love No. 1 N. E. Garner, SW cor. SW NE Sec. 1-10n-17w. S.D. 900 ft.

Goodwill O. & G. Co. No. 1 Berry, Sec. 33-2n-4e. S.D. 2,810 ft.

Yalobusha County

Chas. W. Crader et al No. 1 John Bruce Jane, 990 ft. NE cor. Sec. 24-11s-6w Top chk. 1,565 ft.; T.A. 2,002 ft., chk. S.D.

FLORIDA

Levy County

Florida Oil Discovery No. 2 Cedar Key Co., Sec. 9-15s-13e. S.D.; W.O.; T.D 4,092 ft.

Nassau County

St. Mary Oil Corp. No. 1 Hilliard, Sec. 19-4n-24e. Set 6⅝-in. csg. 3,935 ft. S.D.; fsg. for bit.

Lake County

Union O. & R. Co. No. 1 Gulf Explr., Sec. 17-24s-25e. S.D. 235 ft.

Suwanee County

J. W. Phillips Oil Explrn. Co. No. 1 Shilkett, Sec. 14-4s-14e. Drlg. 150 ft.

LOUISIANA

N. LOUISIANA WILDCATS

Bienville Parish

Ark. La. Gas Co. No. 2 Gayoso, 660 ft. SW cor. SE Sec. 14-16-10. T. Jeter 4,262 ft.; D.S.T. 4,255-71 ft.; tstd. 70 ft. S.W. 8-min.; drlg. sh.&L. 4,766 ft.

Producers O. & G. Co. No. 1 Graves & Thomas, SE cor. SW SE Sec. 23-15-10. Set 13⅜-in. csg. 180 ft.; S.D. 1,540 ft.; (cor.).

Bossier Parish

Premier Inv. Co. No. 1 McDade, SE SW NE Sec. 28-19-11. T.D. 2,384 ft.; acd. with 1,000 gal.; csg. seat gave away; hole full S.W.; 5½-inch csg., 2,342 ft. pmpg. 5 B.O.P.D. and 25 bbls. S.W.; W.O. 2,432 ft.

Caddo Parish

R. E. Allison No. 3 Ellerbe, NE cor. Sec. 28-18-14. Loc.

Claude Bagley No. 1 Crystal fee, NE SW Sec. 24-21-16. Cg. 970 ft.

Carney et al No. 3 Hart, SE NW Sec. 21-21-16. Set 8-in. csg. 1,563 ft.; T.D 1,789 ft.

W. D. Chew No. 6 Stiles, SW NE Sec. 28-21-16. Set 6-in. csg. 1,945 ft.; T.D. 1,954 ft.; tstd. S.W. 1,954 ft. and P.B. 1,944 ft.; drld. out to 1,954 ft.; tstd. S.W.; sw. and abd. 1,954 ft.

Colonial Corp. No. 1 Thigpen-Herold, 330 ft. S and W. C Sec. 34-22-16. Cg. 4,840 ft.; P.B. and cmtd. 5½-in. 2,630 ft.; O.T.D. 4,865 ft.; flwd. oil and went dead; tbg. plugged; comp.; flwg. by heads, making oil and S.W.; no ga.

Paul Cooper No. 2 Stiles, SW SE Sec. 28-21-16. Set 6-in. csg. 1,542 ft.; used 1,500 gal. acd. and tstd. dry; tstd. S.O 1,851 ft.; drlg. to 1,977 ft.; tstd. S.W.; W.O.

L. L. Davidson No. 4 Muslow, NE SE Sec. 26-21-16. Drlg. plug 2,267 ft.; 6-in. csg. 2,234 ft.; recmtd. 6-in. csg. 2,234 ft.; W.O.C.

R. E. Davidson No. 1 Herold et al, NW cor. SE NW Sec. 10-21-16. 6-in. csg. 1,036 ft.; tstd. S.W.; abd. 1,048 ft.

J. P. Driscoll et al No. 1 Woolworth, SE cor. Sec. 26-20-15. Set 16-in. csg. 208 ft.; W.O.O.

Eagle Prod. Co. No. 1 Means, SE cor. NE Sec. 9-23-15. Ran Schimb.; T.D. 6,004 ft.; perf. 5,775-5,815 ft.; tstd. gas and dist.; mudded off perf. and drld. to 6,030 ft.; set pkr. below perf. and tstd. 600 ft. O.I.H.; acdz. and tstd. 5,000,000 cu. ft. gas; think pkr. did not hold; T.D. 6,030 ft.; flwd. est. 2,000,000 cu. ft. gas and 40 bbls. dist. per day; W.O. 6,030 ft.

W. C. Feazel et al No. 1 Hughes, 660 ft. SE cor. Sec. 33-18-14. 13⅜-in. 184 ft.; por. L. 5,555-73 ft.; set 5½-in. csg. 5,589 ft.; drld. plugs and swbg.

Claude Ferguson No. 2 Lawhon, NW cor. Sec. 7-20-25. 7-in. 1,340 ft.; comp.; pmpg. 75 B.P.D.; used 3,000 gal. acd.; T.D. 1,575 ft.

Claude Ferguson No. 3 Lawhon, SW SE Sec. 7-20-15. Drlg. 200 ft.

H. C. Prod. Co. No. 1 Kinnebrew & Ratcliff, NE cor. Sec. 5-19-16. S.D. 2,216 ft.; high wtr.

Harry Hanbury No. 1 Sample, C SW SE Sec. 23-18-14. R.U.

Hurricane Pet. Corp. No. 1-B Chandler, C NW SE Sec. 34-18-14. 13⅜-in. csg. 178 ft.; set 9⅝-in. 1,620 ft.; el. 240 ft.; por. L. 5,605-12 ft. (gas) and 5,612-22 ft. (oil); 5½-in. csg. 5,663 ft.; T.D. 5,676 ft.

Hurricane Pet. Corp. No. 1 North, NW cor. SE NE Sec. 34-18-14. Set 9⅝-in. 1,637 ft.; drlg. sh.&L. 3,582 ft.

R. O. Kniveton No. 1 Kahn, NW cor. Sec. 35-18-14. Set 16-in. 250 ft.; W.O.C

La. Oil Prod. Co. No. 15-B Muslow, Sec. 4-20-15. Set 7-in. csg. with 4½-ft. perf. on bttm. at 2,148 ft.; W.O.S.R.

Ben Levy No. 1 Crystal fee, SW cor. Sec. 23-21-16. Set 6-in. 1,350 ft.; tstd. dry 1,650 ft.

C. D. Loe No. 1 Meyer, SE cor. Sec. 33-18-14. Top Pettit 5,592 ft.; T.D. 5,628 ft.; perf. 5,602-25 ft. and tstd. S.W.; P.B. 5,611 ft.; 5½-in. csg. 5,627 ft.; T. D. 5,631 ft.; P.B. 5,583 ft.; drld. out to 5,610 and perf. 5,602-05 and tstd. S.W.; perf. 5,553-57 ft.; tstd. csg. and perf. 5,592-95 ft. Set tbg. with packer 5,600 ft tstd. S.W. and S.O. 5,592-98 ft. and reperf. 5,589-92 ft.; set pkr. 5,587 ft. and tstd. S.W. 5,600 ft.; S.O.; S.D.; W.O.; T.D. 5,598 ft.; O.T.D. 5,631 ft set retainer plug 5,603 ft. and sqzd. perf. points and reperf. 5,590-5,600 ft.; tstd. oil; no S.W.; swbd. dry; S.O.; used 500 gal. acd.; flwd. by heads, est. 5 B.P.H.; 50% S.W.; ⅛-in. ck.; stopped flwg.; arng. swb.

McDonald & Campbell No. 2 Burton, NW cor. Sec. 7-20-15. 7-in. csg. 1,342 ft.; tstg. 1,583 ft.; W.O.S.R.

Magnolia Pet. Co. No. 5 Caddo Lve. Bd., NE cor. Sec. 7-20-15. R.U.

Manziel et al No. 3 Ramsey, NE SE Sec. 32-21-15, Set 5½-in. csg. 1,348 ft.; acd. with 2,000 gal. at 1,590 ft.; W.O.S.R.

Oils, Inc., No. 1 Cazaux, SW cor. Sec. 10-16-13. O.W.W.O.; O.T.D. 3,500 ft.; wash to bttm., 3,500 ft.; S.D.

Sam Ripps No. 1 Chew-Lvy. Bd., Sec. 23-21-16. 8-in. csg. 1,025 ft.; tstd. S.W.; arng. D.D. 1,037 ft.

J. E. Sedberry No. 1-A Dickinson, SW cor. Sec. 10-19-14; O.W.W.O. O.T.D. 2,410 ft.; 4½-in. csg. 2,435 ft.; tstg 2,459 ft.

Southern Star Pet. Corp. No. 1 Muslow, SE NW Sec. 17-20-15. Pmpd. S.W., O.T.D. 1,698 ft.; S.D. 2,150 ft.

R. W. Williams No. 2 Ark. Fuel, NW cor. SE SE Sec. 26-21-16. 10-in. 64 ft.; 5½-in. 2,230 ft.; tstg. 2,254 ft.

Caldwell Parish

G. W. Ziegen et al No. 15 Cent. La. Lbr. Co., 1,650 ft. S, 330 ft. E, NW cor. Sec. 32-15-2e. Drlg. 1,653 ft.

Catahoula Parish

Sibley Sabine Oil Co. No. 1 Peck, S½ Sec. 36-10-8e. S.D. 3,212 ft.

Claiborne Parish

E. T. Oakes et al No. 2 Kilgore, C NW SE Sec. 28-21-5. Hd. to slightly por. L. 5,294-5,303 ft.; 5½-in. csg. 5,287 ft.; used 6,000 gal. acd.; swbg. to test; tstd. S.S.O. 5,324 ft.; split csg. 2,600 ft.; cmtd. csg.; swbd. dry; set tbg. with pkr.; cannot cmt. off S.W.; T.D. 5,234 ft.; set 4½-in. csg. 5,290 ft.; arng. test 5,324 ft.

Concordia Parish

Edward A. Addy et al No. 1 Posternack, NW SW fr. Sec. 49-8n-9e. T. Wlx. 3,535 ft.; D.&A. 4,512 ft.

De Soto Parish

S. S. Alexander No. 1-A Stoll, Sec. 5-12-16. Set 7-in. csg. 2,705 ft.; acd. with 3,000 gal. and tstd. est. 2,000,000 ft. gas; 400 lbs.; gas exhausted; 1,000 ft. O.I.H., 2,761 ft.; did not pmp. at 2,761 ft.; S.D. W.O. 2,853 ft.

J. A. Lanier No. 1 Powell, SE cor. SE NE Sec. 30-12-11. 10-in. csg. 89 ft.; no sd.; D.&A. 2,720 ft.

Paul Miller No. 2 Jal Drlg. Co., NE Sec. 5-11-11. Set 7-in. csg. 4,038 ft.; perf. 3,901-14 ft.; C.I.; W.O. ga.; R.P. 1,400 lbs.; O.T.D. 4,205 ft.; perf. csg. 3,901-14 ft.; C.I.; W.O. ga.; R.P. 1,400 lbs

Tippett Oil Corp. No. 1 Williams, SE cor. Sec. 31-13-11. Set 7-in. csg. 1,165 ft.; tstd. S.W. 1,410 ft. P.B. 1,335 ft. and acd. 3,000 gal.; tstd. S.W. 1,360 ft.; abd.; T.D. (P.B.) 1,360 ft.

Grant Parish

Long & Porter No. 1 Swope, SE cor. NW SE Sec. 18-9-1e. 10-in. csg. 84 ft.; set 6-in. csg. 1,610 ft.; T.D. 1,625 ft.; W.O.S.R.

La Salle Parish

Pet. Heat & Power Co. No. 3 Richard-

McGREGOR

12 Different Types of Working Barrels

OUR aim is to satisfy our customers by supplying them with a complete line of equipment for pumping wells. Our line includes:

Brass, Steel and Cast Iron Working Barrels
New "MAC" Plunger Barrel
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McGREGOR WORKING BARREL COMPANY
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son, SE cor. Sec. 3-9-1e. 6-in. csg. 1,515 ft.; W.O.C. 1,520 ft.
G. C. Walsenham No. 1 Dean, NW cor. SE Sec. 23-9-1e. 6-in. csg. 1,595 ft.; W.O.C. 1,602 ft.

Madison Parish

Continental Oil Co. No. 3 Singer, C S SW NW Sec. 2-15-11e. Drlg. sd. 2,800 ft.

Natchitoches Parish

Jack Lent et al No. 1 Whatley, SW cor. Sec. 17-10-10. S.O.&G. reported at 1,490-1,516 ft.; arng. run 6-in. csg.; T.D. 1,516 ft.

Red River Parish

Crow Drlg. Co. No. 1 Crichton, 990 ft. S and E. C Sec. 17-13-10. Set 4½-in. csg. 2,540 ft.; T.D. 2,545 ft.; W.O.C.
J. C. Prine No. 3 Haynes, SW cor. Sec. 20-13-10. 5¾-in. csg. 2,510 ft.; D.D. 2,560 ft.; W.O.S.R.
H. B. Schumacher No. 1 Crichton, SW cor. NW Sec. 18-13-10. 10-in. 46 ft.

Sabine Parish

Clyde Creighton No. 1 Bowman Hicks. C NE NW Sec. 3-7-12. 10-in. csg. 60 ft. 7-in. csg. 2,422 ft.
Earl F. Fox No. 1 Cook Ld. Co., SW cor. SE NW Sec. 1-9-12; O.W.W.O. O.T.D. 3,655 ft.; arng. dpn. 3,655 ft.
A. B. House No. 1 Sabine, NW NW Sec. 23-7-14. 8-in. csg. 2,134 ft.; used 7,000 gal. acd.; tstd. dry; cond. mud 3,642 ft.; arng. set 7-in. 3,500 ft.; T.D. 3,642 ft.
LeGrande & Brown No. 1 Tatum, NE cor. NW NE Sec. 17-8-13. Tstd. dry 2,130 ft.; tstd. S.G. acd. with 1,000 gal.; tstd. dry 2,340 ft.; did not acd.; tstd. S.W.; S.O. 2,340 ft.; 500 ft. O.I.H.; used 3,000 gal. acd.; tstd. S.O. 2,340 ft.; will set short string 4-in. csg. 2,340 ft.; W.O.S.R.; 800 ft. O.I.H.
Major Oil Co. No. 2 Sabine, NW cor. NW NE Sec. 12-7-13. Arng. test 2,582 ft.
H. L. Nutting No. 1 Williams, SW cor. Sec. 13-7-11. T.D. 3,130 ft.; used 3,000 gal. acd.; swbg. S.W. 2,860 ft.; will P. B. 2,755 ft.; tstd. S.W.; P.B. 2,730 ft.; acdz.; tstg.; T.D. 2,730 ft.; O.T.D. 3,130 ft.
C. R. Schuster No. 1 Mary Garcia, NE cor. NW SE Sec. 15-7-13. T.D. 2,603 ft.; P.B. 2,585 ft.; tstd. dry; acdz. and tstd. dry; W.O. 2,585 ft.
M. S. Slagle et al No. 1 Chadwick, SW cor. SE NW Sec. 32-8-10. Set 6-in. csg. 2,590 ft.; swbg. S.W.; T.D. 2,649 ft.; rep. rig; tstd. S.W.; D.&A. 2,649 ft.
C. H. Smith No. 1 Sabine Lbr. Co., NE cor. NW NW Sec. 9-7-13. Set 10-in. csg. 66 ft.

Tensas Parish

H. V. Schumacker No. 4 Mound Plantation, Sec. 29-11-12e. Rmg. to bttm.; T. D. 2,450 ft.; S.D. for D.S.T. 2,450 ft.

Webster Parish

R. L. Fisher et al No. 1 S. P. D. Coyle, 660 ft. N and 1,880 ft. E of SW cor. Sec. 23-21-10. Holly. sd. 5,544-59 ft. and 5,809-16 ft.; set 5½-in. csg. 5,782 ft.; T.D. 5,998 ft.
Hunt Oil Co. No. 4 Bodcaw-Stewart, 2,155 ft. N and 660 ft. E, SW cor. Sec. 34-21-10. Holly. sd. 5,821-47 ft.; set 9⅝-in. csg. 5,966 ft.
Hunt Oil Co. No. 1 Sandifer, C NE NE Sec. 4-20-10. No Hollwy. sd.; top "D" sd. 8,534 ft.; S.O. 8,534-50 ft.; "D" sd. 8,537-68 ft.; Bodcaw sd. 8,628-68 ft.; set 7-in. csg. 8,715 ft.; perf. csg. 8,540-65 ft. and tstd. S.W.; tstd. dry 8,538-40 ft., 8,540-42 ft., 8,542-44 ft., and 8,544-46 ft.; perf. again at 8,543-46 ft.; tstd. dry 8,543-46 ft.; sqzd. off perf.; W.O.
Hunt Oil Co. and Stanolind O. & G. Co. No. 1 Coffee-Webster Inv. Co. Unit. C NE NW Sec. 36-31-10. 13⅜-in. csg. 677 ft.; no Holly. sd.; set 9⅝-in. csg. 5,780 ft.; T.D. 5,966 ft.
Magnolia Pet. Co. No. 4 Branton, NE cor. Sec. 6-22-9. 9⅝-in. csg. 5,933 ft.; T. lower Marine 7,750 ft.; T. Bodcaw sd. 8,193 ft.; S.W.; drlg. sh. 8,440 ft.
Magnolia Pet. Co. No. 1 Cox. C NW SW Sec. 15-21-10. Set 13⅜-in. csg. 847 ft.; drlg. sh. 2,250 ft.
Magnolia Pet. Co. and Ohio Oil Co. No. 1 Coyle-Hodges Unit, SW cor. NW Sec. 21-21-10. R.U.
Magnolia Pet. Co. No. 1-C Pardee, C NW NE Sec. 17-23-11. Rmd. and set 9⅝ in. csg. 5,920 ft.; top lower Marine 7,998 ft.; 8,505-10 ft. strks. hd. sd., O. &G. odor; cd. 8,537-39 ft.; 2-ft. sd. gas odor; drlg. to 10,070 ft.; ran elec. form. tester; shot with 100 qts. nitro in basal; G. Rose 5,930-36 ft.; tstd. dry; S.S.O.&G.; used 5,000 gal acd. and 36 B.O.; swbg.; tstd. dry; S.O.; D.&A.; O. T.D. 10,066 ft.
Magnolia Pet. Co. No. 1 Roseberry Unit, 20 ft. N and W, C SE Sec. 29-23-9. Set 13⅜-in. csg. 887 ft.; T. Pettit L. 5,725 ft.; S.O. 5,764-66 ft.; drlg. sh.& L. 5,907 ft.
North American Oil Consol. Co. No. 4 Stewart-Coyle, C NW SE Sec. 29-21-10. Top "D" sd. 8,339 ft.; T. Bodcaw sd. 8,430 ft.; Davis sd. 8,684-8,715 ft.; odor gas and dist.; set 8-in. csg. 8,717 ft.; T.D. 8,724 ft.
Ohio Oil Co. No. 8 B. Sydney Hrs., SW cor. Sec. 16-20-10. No Hollwy. sd.; 9⅝-in. csg. 5,670 ft.; "D" sd. 8,482-98 ft.; Bodcaw sd. 8,588-8,622 ft.; 7-in. csg. 8,596 ft.; comp.; 624 B.P.D. dist. and 5,000,000 cu. ft. gas; ¾-in. ck.; C.P. 1,400 lbs.; T.P. 1,100 lbs.; T.D. 8,636 ft.
Oliphant Oil Corp. No. 1 Gray & Stephens, C SE SW Sec. 35-21-10. Top Tr. Pk. 5,882 ft.; Hollwy. sd. 5,975-88 ft.; 9⅝-in. csg. 5,595 ft.; drlg. sdy. sh. 8,065 ft.
Oliphant Oil Corp. No. 1-A Hodges, C NW NE Sec. 3-20-10. Top Tr. Pk. 5,995 ft.; no Holl. sd.; set 9⅝-in. csg. 5,610 ft.; drlg. sh.&sd. 6,716 ft.
Oliphant Oil Corp. No. 2-B Stewart, C NW NW Sec. 4-20-10. No Hollwy. sd.; 9⅝-in. csg. 5,615 ft.; top "D" sd. 8,594 ft., S.W.; T. Bodcaw 8,684 ft.; 7-in. csg. 8,672 ft.; tstd. S.O.&G. and S.W. 8,692 ft.; D.S.T. failed; used 2,000 lbs. input gas and tstd. 55 bbls. dist. and 103 bbls. S.W. per day; tstd. dry 8,715 ft.; top Davis sd. 8,930 ft.; drlg. sh. 9,068 ft.
Stanolind O. & G. Co. and W. Delaney No. 1 Pardee-Coffee Unit, C NE Sec. 36-21-10. T. Tr. Pk. 5,932 ft.; no Holloway sd.; set 9⅝-in. csg. 5,955 ft.; drlg. sh.&sd. 7,376 ft.
Union Prod. Co. No. 1 Walker Unit, 50 ft. S, C SE Sec. 30-18-8. 13⅜-in. csg. 1,413 ft.; T.D. 6,376 ft.; P.B. 6,200 ft. hole ½° off at 6,418 ft.; drlg. sh. 6,430 ft.
Woodley Pet. Co. No. 1 J. O. Couch, C NW SW Sec. 36-21-10. Drlg. sdy. sh. 8,035 ft.

SOUTH LOUISIANA FIELDS

Abbeville—Vermilion Parish

Continental Oil Co. No. 1 Franciol, Sec. 67-12s-3e. Drk.

Bancroft—Beauregard Parish

Republic Prod. Co. No. 4 Columbia Ld. & Tbr. Co., Sec. 16-6s-13w. Drlg. sh. 6,724 ft.
Republic Prod. Co. No. 5 Columbia Ld. & Tbr. Co., Sec. 15-6s-13w. Drlg. sh. 5,687 ft.
Republic Prod. Co. No. 4 Lutcher Moore Lbr. Co., Sec. 16-6s-13w. S.D. 1,458 ft.
Republic Prod. Co. No. 1 Louis Whitman, Sec. 15-6s-13w. R.U.

Bateman Lake—St. Mary Parish

Texas Co. No. 2 State-Bateman Lake, Sec. 21-16s-12e. Driving piling.

Baton Rouge—East Baton Rouge Parish

Geo. Helis et al No. 1 McInnis, Sec. 36-8s-1w. Loc.
Wm. Helis et al No. 3 Harry B. Nelson, Sec. 36-7s-1w. R.U.

Bayou Blue—Iberville Parish

Humble O. & R. Co. No. 3 Schwing Lbr. Co., Sec. 66-9s-11e. Cg. sd. 7,248 ft.

Bayou Bouillon—St. Mary Parish

Transcontinental Oil Co. No. 5 State, Sec. 13-9s-9e. T.D. 1,275 ft.; 10¾-in. csg. 1,170 ft.; T.D. 3,100 ft.; P.B. 1,700 ft.; prep. to sdtrk. 1,400 ft.

Bayou Choctaw—West Baton Rouge

La. Crusader No. 4 Schwing, Sec. 29-8s-11e. T.D. 8,504 ft.; 7-in. csg. 8,500 ft.; perf. csg. 8,258-68 ft.; sqzd. with cmt.; perf. csg. 8,254-62 ft.; I.P. 389 B.P.D.; 18/64-in. ck.
La. Crusader No. 5 Schwing, Sec. 29-8s-11e. 9⅝-in. csg. 2,250 ft.; T.D. 4,755 ft.; P.B. 4,200 ft.; sdtrkd. 4,214 ft.; T.D. 7,878 ft.; P.B. 7,530 ft.; stk. D.S. P.B. 5,800 ft.; sdtrkd.; drlg. sh. 5,880 ft.
La. Crusader No. 6 Schwing, Sec. 29-8s-11e. R.U.

Bayou Des Allemands—St. Charles Parish

Amerada Pet. Corp. No. 3 St. Charles Ld. Co., Sec. 13-15s-20e. Bldg. foundation.
Amerada Pet. Corp. No. 4 St. Charles Ld. Co., Sec. 13-15s-2e. Loc.

Bay St. Elaine—Terrebonne Parish

Texas Co. No. 2 L.L.&E., Bay St. Elaine, Sec. 18-22s-18e. Loc.

Caillou Island—Terrebonne Parish

Texas Co. No. 4 State-Terrebonne Bay, Sec. 19-23s-20e. T.D. 6,463 ft.; P.B. 5,430 ft.; sdtrkd.; drlg. sh. 6,212 ft.
Texas Co. No. 29 State, Sec. 17-23s-20e. Rig.

Cameron Meadows—Cameron

Burton-Sutton Oil Co. No. 26 Sch. Ld., Sec. 16-14s-13w. T.D. 2,465 ft.; 13⅜-in. csg. 2,465 ft.; T.D. 6,564 ft.; fsg.

Chacahoula—La Fourche Parish

Sun Oil Co. No. 5 Dibert, Stark & Brown Cypress Co., Sec. 70-15s-15e. Bldg. drk.
Sun Oil Co. No. 4 Dibert Stark and Brown Cypress Co., Sec. 70-15s-15e. Drlg. sd. 6,086 ft.

Charenton—St. Mary Parish

Edwards & Aber No. 2 Blanchard, Sec. 21-13s-9e. T.D. 1,148 ft.; 6½-in. csg. 1,141 ft.; tstd. S.W.; P.B. 1,132 ft.; perf. csg. 1,125-32 ft.; W.O.S.R.
Edwards & Aber No. 1 Lebland, Sec. 21-13s-9e. Top sd. 1,119 ft.; T.D. 1,123 ft.; W.O.S.R.
Kinsley Oil, Inc., No. 1-B Hertel, Sec. 30-13s-9e. Loc.
Pan American Prod. Co. No. 1 Law Realty, Sec. 31-13s-10e. Drlg. sh. 7,075 ft.

Convent—St. James Parish

Continental Oil Co. No. 2 Realty Operators, Inc., Sec. 16. 13⅜-in. csg. 1,492 ft.; cg. sh. 7,362 ft.

Creole—Cameron Parish

Superior Oil Co. et al No. 4 State-Gulf of Mexico, Twp. 15s-8w. Drlg. sh. 4,872 ft.

Darrow—Ascension Parish

Humble O. & R. Co. No. 20 Community, Sec. 30-10s-2e. R.U.
Humble O. & R. Co. No. 4 Landry, Sec. 34-10s-2e. Drld. out to 7,045 ft.; 5½-in. csg. 7,030 ft.; I.P. 681 B.P.D.; ¾-in. ck.
Kiva Oil Co. No. 1 Duplessis, sec. 69-10s 2w. S.D. 2,523 ft.

Dog Lake—Terrebonne Parish

Texas Co. No. 22 State, Sec. 5-22s-16e. 13⅜-in. csg. 2,030 ft.; T.D. 6,027 ft., P.B.; sdtrkd.; T.D. 6,602 ft.; trying to sdtrk. at 6,208 ft.; drlg. sh.&L. 6,294 ft.

Edgerly Field—Calcasieu Parish

R. H. Kean et al No. 1 M. J. Muller et al, Sec. 29-9s-11w. 7-in. csg. 2,804 ft.; T.D. 2,817 ft.; bailed S.W.; pig. screen.

Fausse Point—Iberia Parish

Texas Co. No. 5 State Lake-Fausse Point, Sec. 35-11s-8e. Drlg. sdy. sh. 9,843 ft.

Gibson—Terrebonne Parish

Shell Pet. Corp. No. 2 Rek, Sec. 40-17s 15e. Drlg. sh. 9,961 ft.

Garden Island—Plaquemines Parish

Texas Co. No. 31 State, Sec. 28-23s-33e. Drlg. sh. 4,318 ft.

Gillis—Calcasieu Parish

Union Sulphur Co. No. 12 State, Sec. 12-9s-8w. T.D. 9,070 ft.; P.B. 8,613 ft.; set retainer at 6,793 ft.; perf. csg. 6,780-90 ft.; tstg.

Golden Meadows—La Fourche Parish

Martex Pet. Corp. No. 1 Falgout Holding Co., Inc., Sec. 9-19s-22e. Bldg. drk.

Grand Bay—Plaquemines Parish

Gulf Oil Corp. No. 3 Grand Prairie, Sec. 6-20s-19e. 20-in. csg. 70 ft.; 13⅜-in. csg. 1,600 ft.

Gueydan—Acadia Parish

A. M. Barbe No. 1 G. L. Humble, Sec. 27-11s-1w. T.D. 8,685 ft.; 7-in. csg. 4,

Hackberry—Cameron Parish

F. W. Bennett No. 1 Bickford, Sec. 37-12s-10w. Drlg. sh. 3,990 ft.
L. W. Capps et al No. 1 Duhon, Sec. 27 12s-10w. T.D. 3,487 ft.; 7-in. csg. 3,271 ft.; pmpd.; recvd. no fluid; S.D.
Stanolind O. & G. Co. No. 56 State, Kelso Bayou, Sec. 22-12s-10w. Drlg. sh. 2,352 ft.
Superior Oil Co. No. 5 Benson Vincent Sec. 30-12s-10w. Drlg. sd.&sh. 7,450 ft.
Texas Co. No. 16-B State-Hackberry, Twp. 12s-9w. Drlg. sh. 8,172 ft.
Texas Co. No. 24-B State, Sec. 12s-9w. T.D. 8,052 ft.; sdtrkd.; T.D. 8,163 ft.; 7-in. csg. 8,050 ft.; perf. csg. 7,90-16 ft.; tstd. S.W.; P.B. 7,780 ft.; perf csg. 7,763-74 ft.; W.O.S.R.
Union Sulphur Co. No. 7 Caldwell et al Sec. 37-12s-10w. T.D. 7,208 ft.; I.P. 1,040 B.P.D.; ¾-in. ck.; T. sd. 7,193 ft.
Union Sulphur Co. No. 11 Doiron, Sec. 37-12s-10w. Drlg. sh. 6,590 ft.

Horseshoe Bayou—St. Mary Parish

Texas Co. No. 2 State, Sec. 37-17s-9e. 9⅝-in. csg. 11,631 ft.; T.D. 12,768 ft.; rmg. at 12,610 ft.

Jeanerette—St. Mary Parish

Herton Oil Co. No. 1 Adeline Sugar Co., Sec. 39-13s-9e. Drlg. sh. 8,996 ft.
Herton Oil Co. No. 9 Carter, Sec. 38-13s-9e. Drlg. sd.&sh. 10,026 ft.

Jefferson Island—Iberia Parish

Texas Co. No. 2 Jefferson Island, Sec. 58-12-5e. 18⅝-in. csg. 40 ft.; drlg. L.& sh. 6,273 ft.
Texas Co. No. 2 State-Lake Peigneur, Twp. 12s-5w. Drk.

Jennings—Acadia Parish

W. T. Burton No. 6 Roboria, Sec. 41-9s-2w. 7-in. csg. 6,721 ft.; fsg. tbg.; T.D. 6,997 ft.; sdtrkd. at 6,118 ft.; drld. to 6,178 ft.; sdtrkd. at 6,023 ft.; T.D. 6,732 ft.; trying to drill by fish; P.B. 6,104 ft.; W.O.C.; sdtrkd. 6,020 ft.; T.D. 6,056 ft.; 7-in. csg. 2,203 ft. and 10¾-in. csg. 2,108 ft.; sdtrkd.; drld. into old hole; P.B.
A. W. Forrester No. 1 Jules Clement, Sec. 46-9s-2w. T.D. 3,060 ft.; S.D.
Glassell & Glassell No. 7 Trushel, Sec. 42-9s-2w. T.D. 7,628 ft.; 7-in. csg. 7,624 ft.; perf. csg. 6,650-70 ft.; tstd. dry gas.
Guaranty Oil Co. No. 1-A Houssiere Latreille, Sec. 47-9s-2w. T.D. 2,576 ft.; abd.
Gulf Ref. Co. No. 1 Lamb, Sec. 45-9s-2w. Drlg. sh. 6,673 ft.
Jolly Pet. Co. No. 2 Crusel, Sec. 41-9s-2w. 16-in. 84 ft.; T.D. 6,880 ft.; I.P. 480 B.P.D.; ¼-in. ck.
Jolly Pet. Co. No. 3 McFarlain, Sec. 41-9s-2w. T.D. 7,288 ft.; run 7-in. csg.
L. & L. Oil Co. No. 4 Houssiere Latreille, Sec. 47-9s-2w. T.D. 1,825 ft.; 7-in. csg. 1,817 ft.; T.D. 1,881 ft.; pmpd. dry; S.D.
Port City Oil Co. No. 23 Jennings Haywood, Sec. 41-9s-2w. T.D. 2,761 ft.; 7-in. csg. 2,300 ft.
Shell Pet. Corp. No. 5 Community, Sec. 40-9s-2w. T.D. 7,892 ft.; P.B. 6,113 ft.
Stanolind O. & G. Co. No. 113 Crowley Oil & Mineral Co., Sec. 48-9s-2w. 8⅝-in. 1,556 ft.; T.D. 7,550 ft.; abd.
Stanolind O. & G. Co. No. 114 Crowley Oil & Mineral Co., Sec. 48-9s-2w. Bldg. road.
Superior Oil Co. No. 16 Wm. Leckelt, Sec. 42-9s-2w. Drlg. sd. 6,174 ft.

Lafitte—Jefferson Parish

Texas Co. No. 2 Lafitte, Sec. 19-17s-24e. T.D. 10,072 ft.; setting screen; perf. csg. 9,980-95 ft.; I.P. 1,264 B.P.D.; ¾-in. ck.
Texas Co. No. 4 Madison Realty Co., 17s-24e. T.D. 10,134 ft.; 7⅝-in. csg. 10,132 ft.
Texas Co. No. 1 Sch. Bd., Sec. 16-17s-24e. 13⅜-in. csg. 2,030 ft.; T.D. 10,622 ft.; 9⅝-in. csg. 10,622 ft.; drlg. sh.& L. 10,885 ft.

Lake Hermitage—Plaquemines Parish

Gulf Oil Corp.-Humble O. & R. Co. No. 9 La Fourche Basin, Sec. 2-18s-25e. R.U.

Lake Pelto—Terrebonne Parish

Texas Co. No. 22 State, Sec. 8-23s-18e. T.D. 6,027 ft.; sdtrkd.; drlg. sh. 6,465 ft.

Leesville—La Fourche Parish

Lincoln Oil Co. No. 2 Visier, Sec. 26-21s-22e. Drlg. sh. 4,188 ft.
Texas Co. No. 7 Leeville, Sec. 27-21s-22e. T.D. 8,667 ft.; D.S. stk.; sdtrkd.; T.D. 8,436 ft.; sdtrkd.; T.D. 8,685 ft.; stk. 9⅝-in. csg. at 8,577 ft.; sdtrkd. 8,440 ft.; stk. D.S.; sdtrkd.; drlg. sh. 9,517 ft.

Lirette—Terrebonne Parish

Humble O. & R. Co. No. 2 H. J. Ellender, Sec. 32-19s-19e. Dredge canal.
Humble O. & R. Co. No. 1 Laterre, Inc., Sec. 31-19s-19e. 13⅜-in. csg. 3,174 ft.; T.D. 11,680 ft.; 7-in. csg. 8,422 ft.

Lake Long—La Fourche Parish

Fohs Oil Co. No. 7 State-Lake Long, Twp. 17s-19e. T.D. 295 ft.; 18⅝-in. csg. 295 ft.; cg. sdy. sh. 10,232 ft.

New Iberia—Iberia Parish

Canal Oil Co. No. 7 Bernard, Sec. 54-12s-7e. T.D. 5,620 ft.; perf. csg. 4,632-60 ft.; tstg.
Wm. Helis No. 5 Schwing, Sec. 56-12s-7e. T.D. 4,954 ft.; P.B. 4,188 ft.; W. O.C.
Texas Co. No. 2 Bryant, Sec. 25-12s-7e. R.U.
Texas Co. No. 2-A Hanzon, Sec. 54-12s-7e. R.U.
Texas Co. No. 3-B Hanszen, Sec. 54-12s-7e. T.D. 6,856 ft.; 7-in. csg. 6,838 ft.
Texas Co. No. 1 Renaudet et al, Sec. 71-12s-7e. Drlg. sh.&L. 5,617 ft.

North Crowley—Acadia Parish

Humble O. & R. Co. No. 3 H. T. Habetz, Sec. 45-8s-1e. T.D. 8,748 ft.; 7-in. csg. 8,748 ft.

North Tepetate—Acadia Parish

Atlantic Ref. Co. No. 1 Alcide Fournerat, Sec. 11-7s-2w. Drlg. 4,780 ft.
Atlantic Ref. Co. No. 3 Klumpp, Sec. 13-7s-2w. Drlg. sh. 7,732 ft.

Port Barre—St. Landry Parish

Pan American Prod. Co. No. 1 Rene Nezat. R.U.
Y. D. Spill No. 1 Gaudet, Sec. 4-6s-5e. S.D. 4,700 ft.

Potash—Plaquemines Parish

Humble O. & R. Co. No. 37 Orleans Lv. Bd., Sec. 23-18s-15e. T.D. 3,138 ft.; rng. 13⅜-in. csg. 3,061 ft.; S.D. 7,717 ft.
Western Gulf Prod. Co. No. 1 Paseale, Sec. 6-18s-27e. Loc.
Western Gulf Prod. Co. No. 1-A Treadway, Sec. 6-18s-27e. Loc.; (cor.).

Quarantine Bay—Plaquemines Parish

Gulf Oil Corp. No. 2-A Orleans Levee Bd., Sec. 7-19s-17e. Drlg. sh. 476 ft.
Gulf Ref. Co. No. 5 State, Sec. 17-19s-17e. Loc.
Gulf Oil Ref. Co. No. 7 State, Sec. 18-19s-17e. T.D. 8,183 ft.; 7-in. csg. 8,140 ft.; I.P. 432 B.P.D.; ¼-in. ck.

Raceland—La Fourche Parish

Amerada Pet. Corp. No. 1 Godchaux Sugars, Inc., Sec. 34-15s-19e. 18⅝-in. csg. 262 ft.; T.D. 11,312 ft.; 7-in. csg. 11,312 ft.; T.A.
Amerada Pet. Corp. et al No. 2 Godchaux, Sec. 34-15s-19e. R.U.

Sorrento—Ascension Parish

Sorrento Pet. Corp. No. 2 White, Sec. 22-10s-4e. 10¾-in. csg. 1,940 ft.; T.D. 7,068 ft.; abd.

South Roanoke—Jeff Davis Parish

Union Sulphur Co. No. 2 T. R. S. Farms, Sec. 23-10s-4w. T.D. 10,954 ft.; (cor.). sdtrk. 9.075 ft.: drilled to 9.266 ft.: stuck D.S.; P.B. 8,860 ft.; sdtrkd.; T.D. 10,177 ft.; cleaned hole; rmg. 685 ft.; prep. to perf. csg.

Starks—Calcasieu Parish

J. R. Turnbull et al No. 6 Industrial Lbr. Co., Sec. 30-9s-12w. T.D. 1,929 ft.; S.D.

Sweet Lake—Cameron Parish

Pure Oil Co. No. 1 Stanolind O. & G. Co. fee lse., Sec. 12-13s-8w. Drlg. sd.&sh. 6,919 ft.

Timbalier Bay—La Fourche Parish

Gulf Oil Corp. No. 3 State (O.W.D.D.), Sec. 36-23s-21e. O.T.D. 8,728 ft.; P.B.; sdtrkd.; T.D. 6,795 ft.; 7-in. csg. 6,758 ft.; O.S. 6,792-95 ft.; flwd. 129 bbls. net oil, 2 to 23% S.W.; ¼-in. ck.
Gulf Oil Corp. No. 4 State, Sec. 36-23-21e. T.D. 7,373 ft.; T.D. sdtrkd. hole 6,231 ft.; fsg.; P.B. and sdtrkd. 3,501 ft.; T.D. 6,545 ft.; drld. by jnk. to 6,668 ft.; P.B.; 7-in. csg. 6,651 ft.; top salt 7,224 ft.; T.D. 7,268 ft., salt; P.B. 5,400 ft.; perf. csg. 5,330-40 ft.; tstd. 3,504 lbs. press.; reset screen; would not flow; reset screen; bailed dry; P.B. 5,345 ft.; perf. csg. 5,330-40 ft.;

swbd. dry.; flwg. 11 B.O.P.D.; ¼-in. ck.; T.P. 60 lbs.

Valentine—La Fourche Parish

Wm. Helis et al No. 4 Valentine Sugars, Inc., Sec. 2-17s-20e. T.D. 7,567 ft.; P.B. 6,765 ft.; drld. out to 6,790 ft.; tstd. oil and S.W. 6,726-95 ft.; P.B. 4,750 ft. sdtrkd. 4,550 ft.; T.D. 6,722 ft.; 7-in. csg. 6,709 ft.; I.P. 340 B.P.D.; ¼-in. ck.

Pan American Prod. Co. No. 2-A Community, Sec. 58-17s-20e. T.D. 9,629 ft.; tried to blow out; P.B. 7,983 ft.; sdtkd.; drlg. sh. 8,564 ft.

Pan American Prod. Co. No. 2 Robichaux, Sec. 4-17s-20e. T.D. 6,802 ft.; abd.

John Vacerro et al No. 1 **Acosta Hrs.**, Sec. 9-17s-20e. T.D. 5,402 ft.; top oil sd. 5,390 ft.; I.P. 256 B.P.D.; ¼-in. ck.

Venice—Plaquemines Parish

Tide Water Asso. Oil Co. No. 9 Manhattan Land & Fruit Co., Sec. 26-21s-30e. 10¾-in. csg. 2,457 ft.; top salt 5,505 ft.; T.D. 5,565 ft.; sdtrkd. 4,647 ft.; T.D. 5,558 ft.; fsg.

Villa Platte—Evangeline Parish

Continental Oil Co. No. 1 Fontenot-Deshotels, Sec. 44-3s-2e. Loc.

Continental Oil Co. No. 1 Fontenot Ludean, Sec. 45-3s-2e. Drk.

Continental Oil Co. No. 3 Piere McDaniel, Sec. 44-3s-2e. Drlg. sh. 8,992 ft.

Continental Oil Co. No. 2 Martha Haas, Sec. 44-3s-2e. T.D. 9,089 ft.; I.P. 372 B.P.D.; ¼-in. ck.

Continental Oil Co. No. 2 N. H. Hirsch, Sec. 44-3s-2e. T.D. 9,077 ft.; I.P. 203 bbls. 14 hrs.; ¼-in. ck.

Continental Oil Co. No. 2 Petre, Sec. 44-3s-2e. Drlg. sh. 8,992 ft.

Continental Oil Co. No. 2 Vidrine, Sec. 34-3s-2e. Loc.

Texas Co. No. 2 fee, Sec. 27-3s-2e. T.D. 8,988 ft.; 6⅝-in. csg. 8,958 ft.

Vinton—Calcasieu Parish

J. M. Donald et al No. 1 Gordon, Benchenstein-Flynn, Sec. 34-10s-12w. T.D. 1,000 ft.; W.O.C.

C. A. Richardson et al No. 1 Vincent, Sec. 34-10s-12w. Drlg. sh. 2,011 ft.

West Gueydan—Vermilion Parish

Magnolia Pet. Co. No. 1 Adam, Comier, Sec. 5-12s-2w. Drlg. sh. 7,545 ft.

West Lake Verret—St. Martin Parish

Shell Pet. Corp. No. 2 Jeanerette, Sec. 14-14s-12e. Drlg. sdy. sh. 1,990 ft.

Woodlawn—Jeff Davis Parish

Union Sulphur Co. No. 2 Osmon, Sec. 7 9s-5w. Drlg. sh. 3,616 ft.

Union Sulphur Co. No. 1 A. H. Thomas, Sec. 12-9s-6w. Drlg. sh.&L. 9,012 ft.

S. LOUISIANA WILDCATS

Acadia Parish

Tennark, Inc., No. 1 C. J. Freeland, Sec. 64-7s-2e. Drlg. sh. 7,350 ft.

Tri Parish Drillers, Inc., No. 1 Paul Stag, Sec. 4-7s-1w. Drk.

Assumption Parish

Humble O. & R. Co. No. 1 Milliken & Farewell Co., Inc., Sec. 79-14s-14e. 13⅜-in. csg. 2,978 ft.; cg. sh. 8,148 ft.

Avoyelles Parish

Sid Richardson No. 1 Haas Inv. Co., Sec. 7-2ss-3e. T.D. 8,581 ft.; cd. sd.&sh., O. &G. odor, 8,450-8,520 ft.; run 7-in. csg.

Calcasieu Parish

David B. MacDaniel No. 2 Sch. Ld., Sec. 16-9s-7w. 15½-in. csg. 46 ft.; 10¾-in. csg. 1,299 ft.; T.D. 7,890 ft.; S.D.

Cameron Parish

Humble O. & R. Co. No. 1 Sweet Lake Ld. & Oil Co., Sec. 6-12s-6w. Drlg. sh. 8,489 ft.

Superior Oil Co. et al No. 1 Delmer, Sec. 32-14s-8w (core test). Loc.

Superior Oil Co. No. 1 John Pradia, Sec. 4-15s-8w (core test). T.D. 7,544 ft.; abd.

Iberia Parish

Texas Co. No. 1 Petit Anse, Sec. 59-13s-6e. R.U.

Texas Co. No. 2-B Vermilion Bay, Twp. 16s-5e. T.D. 9,667 ft.; R.U. to W.O.

Iberville Parish

California Co. No. 1 Schwing Lbr. Co., Sec. 96-10s-10e. 20-in. csg. 177 ft.; drlg. sh. 5,400 ft.

Humble O. & R. Co. No. 1-B A. Wilberts Sons Lbr. Co., Sec. 78-8s-8e. 13⅜-in. csg. 1,993 ft.

Shell Pet. Corp. No. 1 Natalbany Lbr. Co., Sec. 18-9s-2e. Drlg. sd. 773 ft.

La Fourche Parish

Texas Co. No. 1 L.L.&E. Golden Meadows, Sec. 77-19s-21e. Drlg. sdy. sh. 7,794 ft.

Texas Co. No. 1 La Terre, Sec. 1-20s-21e. T.D. 8,898 ft.; 9⅝-in. csg. 8,898 ft.; T.D. 11,135 ft.; 2,509 ft. 6⅝-in. csg. 11,135 ft.; perf. csg. 9,975-10,005 ft.; tstd. 21 stnds. dist.; P.B. 8,600 ft.; drlg. out cmt. to 9,316 ft.; perf. csg. 9,265-90 ft.; tstd. S.W.; made sqz. job; reperf. csg. 9,230-57 ft.; make D.S.T.; perf csg. 8,850-70 ft.; rec. 71 stands of S.W. and 3 stands of mud and oil; sqzd. perf.; W.O.C.; perf. csg. 8,500-20 ft.; I.P. 828 bbls. 37.4-grav. oil per day; ¼-in. ck.; started showing S.W.; killed; reperf. csg. 8,500-10 ft.; I.P. 216 B.P.D.; ¼-in. ck.; T.P. 2,475 lbs.

Texas Co. No. 1 State-Catfish Lake, Sec. 77-19s-21e. 18⅝-in. csg. 90 ft.; T.D. 8,205 ft.; D.S. stk.

Orleans Parish

W. T. Burton No. 2-B Faubourg de Montluzin, Sec. 1-10s-13e. Cd. 10,184-10,214 ft.; formation had small amt. of oil and slight gas show; T.D. 10,680 ft.; S.W. sd.; to P.B.

W. T. Burton No. 1 L.&N.R.R., Sec. 18-11s-15e. Dredge canal.

W. T. Burton No. 2 L.&N.R.R., Sec. 1-12s-14e. Dredge canal.

W. T. Burton No. 1-B R. E. E. de Montluzin, Sec. 1-10s-13e. Drk.

W. T. Burton No. 1 State-Lake Pontchartrain, Twp. 10s-13e. T.D. 8,367 ft.; P.B. 7,775 ft.; sdtrkd. at 7,959 ft.; T. D. 8,165 ft.; 9⅝-in. csg. 8,165 ft.; T.D. 8,241 ft.; tstd. S.W.; D.S.T. 8,135-8,241 ft.; T.D. 11,149 ft.; fsg.

Plaquemines Parish

Texas Co. No. 1 L.L.&E. Bastian Bay, Sec. 43-20s-28e. Drlg. sh. 5,596 ft.

St. Bernard Parish

Gulf Ref. Co. No. 4-State-R.R. (Lake Borgne), Twp. 12s-15e. 9⅝-in. csg. 8,161 ft.; drlg. sdy. sh.&L. 9,423 ft.

Wm. Helis et al No. 1 Mereaux Munez, Sec. 34-12s-12e. Drlg. sh. 8,002 ft.

Vendome Pet. Corp. No. 1 Kenilworth Plantation, Sec. 59-13s-14e. Drlg. sh. 8,301 ft.

St. Charles Parish

Texas Co. No. 1 L.L.&E. Paradis, Sec. 39-14s-20e. Drlg. sh. 6,873 ft.

St. James Parish

Shell Pet. Corp. No. 1 Shexnayder, Sec. 38-12s-15e. T.D. 8,281 ft., sd.

St. Martin Parish

Magnolia Pet. Co. No. 1 Mercelin, Sec. 8-10s-7e. Loc.

Texas Co. No. 11 St. Martin Ld. Co., Sec. 21-8s-7e. Top salt 8,904 ft.; T.D. 9,404 ft.; 7-in. csg. 8,912 ft.; P.B. 7,175 ft.; drld. out to bttm.; P.B. 8,080 ft.; perf. csg. 8,060-70 ft.; tstd. mud, gas and S.W.; sqzd. off perf.; perf. csg. 8,060-65 ft.; tested 38 stands oil and gas showing fresh wtr.; set screen and lnr.; pmpg.; showing est. 25 B.O.; 7 hrs.; tstg.

St. Mary Parish

Phillips Pet. Co. No. 1 Whitney Natl. Bnk., Sec. 13-15s-12e. R.U.

J. Perry Scranton et al No. 1 Martinez, Sec. 133-15s-17e (core test). Drlg. sh. 746 ft.

St. Tammany Parish

A. P. Portas No. 1 W. C. Forbes, Sec. 33-7s-15e. Drk.

Terrebonne Parish

Texas Co. No. 1 Continental Ld. & Fur Co., Sec. 29-18s-14e. 18⅝-in. csg. 101 ft.; T.D. 10,039 ft.; P.B. 9,852 ft.; sdtrkd. 9,984 ft.; T.D. 11,931 ft.; rmg. hole 11,160-11,850 ft.; well continues to blow out.

Texas Co. No. 2 State-Coon Point, Twp. 23s-14e. 13⅜-in. csg. 1,900 ft.; T.D. 2,851 ft.; driving piling.

West Baton Rouge Parish

Humble O. & R. Co. No. 1 S. A. Levert, Sec. 5-8s-12e. Drlg. sh.&sd. 6,500 ft.

TEXAS

Week Ending January 14

GULF COAST FIELDS

Hastings Field—Brazoria County

Humble O. & R. Co. No. 2 Lerew, C. W. Groos Sur., Sec. 38. Loc.

Stanolind O. & G. Co. No. 2-C Cecil Brown, W. H. Snyder Sur. Drk.

Stanolind O. & G. Co. No. 12 South Tex. Grain Co., Perry & Austin Sur. T.D. 6,158 ft.; tstg.

Old Ocean—Brazoria County

Commerce Oil Co. No. 1 S. M. Patterson, Polly & Chance Sur. 9⅝-in. csg. 7,000 ft.; T.D. 10,200 ft.; run electrical cg. survey; no report.

Harrison & Abercrombie No. 3 Armstrong Plantation, Polley & Chance Sur. S.D. 8,878 ft.

Harris & Abercrombie No. 4 Armstrong, Polly & Chance Sur. Drlg. sdy. sh. 10,410 ft.

Harrison & Abercrombie No. 3 Chenault, C. Breen Sur. Drlg. sd., sh.&L. 9,836 ft.

Harrison & Abercrombie No. 1 Lois Buck, Polley & Chance Sur. Drlg. sh. &L. 4,639 ft.

Sun Oil Co. No. 1 Campbell, Chas. Breen Sur. T.D. 10,400 ft.; W.O.C.

Seabreeze—Chambers County

Sun Oil Co. No. 5 Acom, H.T.&B. Sur. No. 103. 10¾-in. csg. 1,945 ft.; T.D. 8,565 ft.; 7-in. csg. on bttm.

Sun Oil Co. No. 3-A White, H.T.&B. Sur. No. 118. 10¾-in. csg. 1,910 ft.; T.D. 8,526 ft.; rng. electrical cg. survey.

Cedar Point—Chambers County

Standard Oil Co. of Texas No. 35-118 State. Drlg. sh. 4,135 ft.

League City—Galveston County

Geo. Echols No. 2 J. H. Ross, Perry & Austin Sur. R.U.

Gulfboard Oil Corp. et al No. 1 Ross-Stewart, Perry & Austin Sur. 10¾-in. csg. 3,100 ft.

Phillips Pet. Co. No. 1 Brittnacher, S. F. Austin Sur. R.U.

Phillips Pet. Co. No. 1 J. C. Ott, S. F. Austin Sur. Cg. sh. 8,096 ft.

Phillips Pet. Co. No. 1 Dr. Patton, S. F. Austin Sur. Cg. sh. 9,479 ft.

Phillips Pet. Co. No. 1 Stewart, Title Guaranty, S. F. Austin Sur. Cg. 8,406 ft.

West Prod. Co. No. 1 fee, Lot 2, Blk. 5, Perry & Austin Sur. Loc.

Bammel—Harris County

Hamil & Smith No. 1 Majorwitz, W.C.R. R. Sur. No. 10, Blk. 4. Drlg. sh. 5,139 ft.

H. M. Harrell et al No. 1 John Ehrhardt, W. P. Ketchum Sur. Loc.

H. M. Lawrence and Geo. Lawrence No. 1 C. Ehrkardt, H. Simmons Sur. 9⅝-in. csg. 1,010 ft.; T.D. 6,208 ft.; 5½-in. csg. 6,208 ft.; perf. csg. 6,170-90 ft.; comp. as dist. producer.

Clear Lake—Harris County

Humble O. & R. Co. No. 3-C Humble-West fee, Geo. B. McKinstry Sur. R.U.

Stanolind O. & G. Co. No. 1 Geo. Sowden, Jas. Lindsey Sur. T.D. 5,861 ft.; 7-in. csg. 5,848 ft.

Clinton—Harris County

Stanolind O. & G. Co. No. 2 Edwards, Reels & Trobough Sur. Drk.

Eureka—Harris County

Jack Frazier No. 6 Hogg, J. Reinerman Sur. T.D. 7,779 ft.; perf. csg. 7,702-12 ft.; tstg.

Jack Frazier No. 5 Vollmer, Nieman Sur. T.D. 8,239 ft.; W.O.C.

Houston Oil Co. No. 3 Helberg & Lackner, J. Reinerman Sur. Loc.

Means & McGehee No. 1-E Lackner, H. Reinerman Sur. Cg. 7,689 ft.

Tide Water Asso. Oil Co. No. 1 M. A. Roy, J. Reinerman Sur. T.D. 8,650 ft.; perf. csg. 7,945-49 ft.; flwg. 12 B.F.P. H.; 7/32-in. ck., 24% S.W.; tstg.

Fairbanks—Harris County

E. M. Halley No. 1 Albert Brown, J. Clarkson Sur. Loc.

Housh & Thompson No. 2 Yerkes, Sam Lewis Sur. Drlg. sh. 4,536 ft.

Friendswood—Harris County

Humble O. & R. Co. No. 18 Gray, Perry & Austin Sur. Drlg. sh. 4,040 ft.

Humble O. & R. Co. No. 1-B Humble-West fee, Luke Hemenway Sur. Drlg. sh. 5,187 ft.

Humble O. & R. Co. No. 2-B Humble-West fee, Luke Hemenway Sur. Drlg. sh. 3,939 ft.

Humble O. & R. Co. No. 1 J. L. Jones, Perry & Austin Sur. Drk.

Humble O. & R. Co. No. 3 Settegast, T. Choate Sur. Drk.

Humble O. & R. Co. No. 1 E. E. Watson. Drk.

Humble O. & R. Co. No. 3-B West, Luke Hemenway Sur. Loc.

Humble O. & R. Co. No. 4 West Prod. Co., T. Choate Sur. Top sd. 5,552 ft.; T.D. 6,079 ft.; tstg.

Cheek—Jefferson County

Humble O. & R. Co. No. 1 E. K. Fallor, C. Hillebrandt Sur. T.D. 7,720 ft.; run electrical survey.

Cordele—Jackson County

H. J. Porter No. 1 Woussi, Peter White Sur. Loc.

Clam Lake—Jefferson County

Shell Pet. Corp. No. 1 McFaddin, S. A. Pace Sur. Cg. sh. 5,956 ft.

LaBelle—Jefferson County

Sun Oil Co. No. 4 Broussard-Hebert, B. Blackman Lge. T.D. 8,675 ft.; 7-in. csg. 8,605 ft.; pmpg. wtr. into hole to kill press. in No. 3 Broussard; made sqz. job; dpnd. 8,680 ft.; fsg. for D.P.; milling out of csg. 8,466-70 ft.; T.D 8,795 ft.; D.S. stk.; sdtrkd.; T.D. 8,670 ft.; 5-in. csg. on bttm.; perf. csg. 8,525-8,640 ft.; prep. to test.

Hardin—Liberty County

Gulf Oil Corp. No. 4 Cessna, H. B. Johnston Sur. R.U.

Humble O. & R. Co. No. 10-A Partlow, H. B. Johnston. T.D. 7,612 ft.; 5½-in. csg. 7,592 ft.

Texas Co. No. 1 Humphrey, F. Hardin Sur. T.D. 7,663 ft.; 5½-in. csg. 7,660 ft.

Woodley Pet. Co. No. 2 Humphrey, F. Hardin Sur. T.D. 7,954 ft.; 5½-in. csg. 7,897 ft.; perf. csg. 7,567-76 ft.; flwd. S.W.

Orange—Orange County

C. L. Brown No. 2-B Lutcher Moore Lbr. Co., J. Dyson Sur. Drlg. sh. 4,236 ft.

Continental Oil Co. No. 18 Chesson, Wm. Dyson Sur. Drlg. 1,310 ft.

Gulf Oil Corp. No. 3 Orange Natl. Bnk., Wm. Dyson Sur. Spd.

Hankamer et al No. 1 Conley, Wm. Dyson Sur. R.U.

Keown Oil Corp. No. 1 Lutcher Moore, Jas. Dyson Sur. Drlg. 4,939 ft.

John G. Mayo No. 1 Seales, Wm. Dyson Sur. 10¾-in. csg. 1,000 ft.; T.D. 6,179 ft.; perf. csg. 6,168-76 ft.; comp. as gas well.

Red Bank Oil Co. No. 1 First Natl. Bnk., Wm. Dyson Sur. Perf. csg. 5,625-29 ft.; flwd. gas and dist.; comp. as dist. producer.

Union Prod. Co. No. 2 Lutcher Moore, J. Dyson Sur. Spd.

Port Neches—Orange County

Texas Co. No. 13 Kuhn, M. E. Hall Sur. Dredge canal.

Ace—Polk County

Peyton Bros. No. 3-B Kirby West, G. S. Thomas Sur. Drlg. sh. 6,140 ft.

Segno—Polk County

Gulf Oil Corp. No. 2-B Quin, A. Morales Sur. T.D. 5,150 ft.; 5½-in. csg. on bttm.

Gulf Oil Corp. No. 5 Ragan, I.&G.N. Sur. No. 15. Loc.

Gulf Oil Corp. No. 15 Wing, I.&G.N. Sur. No. 13. Drlg. sh.&sd. 8,005 ft.

Humble O. & R. Co. No. 10-B Kirby Lbr. Co., M. Victor Sur. T.D. 8,195 ft.; tstg.

Providence Oil Co. No. 2 Wing, I.&G.N. Sur. No. 14. Drlg. sh. 6,915 ft.

Spurger—Tyler County

Republic Prod. Co. No. 16 fee, N. Hurd Sur. Drlg. sh. 6,779 ft.

Katy—Waller County

Stanolind O. & G. Co. No. 1 Cohee, Sec. 109, H.&T.C. Sur. Loc.

GULF COAST WILDCATS

Austin County

Crown Cent. Pet. Corp. et al No. 1 Huebner, Renkestoiz Sur. M.I.M.

Kirby Pet. Co. No. 1 Herring, H.&T.C. Sur. No. 102. Top Cockfield 4,463 ft.; drlg. sh. 4,470 ft.

Brazoria County

Fabriguze et al No. 1 Freeport Sulphur, Stephen F. Austin Sur. (Bryan Mound). M.I.M.

Humble O. & R. Co. No. 1 Yates, S. Marsh Sur. Drlg. sh. 760 ft.

Chambers County

Geo. Anderson No. 1 Julia Casey, W. D. Smith Sur. Loc.

L. D. Roberts No. 1 C. H. Lang, T.&N. O. Sur. No. 35. Drk.; (cor.).

Colorado County

Coyle & Concord No. 4-B Powell, I.&G. N. Sur. No. 45. T.D. 6,124 ft.; S.D. for repairs.

Mills Bennett Prod. Co. No. 1 J. M. Truchard, Ed Curbit Sur. Drk.

Fort Bend County

N. W. Hunter No. 1 Lighau, B.B.B.&C. Sur. (north flank Big Creek). Drlg. sh. 2,539 ft.

Kennelly & Hendee et al No. 1 W. T. Boyd, Wm. Barrett & A. Harris Sur. T.D. 1,503 ft.; abd.

Galveston County

Sun Oil Co. No. 2 Cade, A. Dickson Sur. M.I.M.

Harris County

H. H. Givens No. 2 F. K. Adone, David Middleton Sur. Drk.

Jefferson County

I. E. Harwell No. 1 State, Gulf of Mexico, T.D. 5,840 ft.; D.S. stk.; pulled in two; S.D.

Humble O. & R. Co. No. 13-B McFaddin-State, Sec. 8. 10¾-in. csg. 2,758 ft.; T.D. 5,859 ft.; D.S. stk.; backed off at 3,688 ft.; P.B. 4,220 ft.; sdtrkd.; drlg. sh. 4,270 ft.

Matagorda County

Maja Oil Co. No. 1 Robbins, A. Sheppard Sur. R.U.

Sun Oil Co. No. 1 Cavallin, Theo. F. Koch subd., John Duncan Sur. Drlg. sh. 6,838 ft.

Montgomery County

Deep South Pet. Co. No. 1-A Foster Lbr. Co., Pryor Bryan Sur. Loc.

H. A. Pennington et al No. 1 F. L. Banker, L. M. H. Washington Sur. S.D. 1,033 ft.

J. Smith et al No. 1 J. V. Scott, F. A. B. Wheeler Sur. S.D. 3,623 ft.

Orange County

Sun Oil Co. No. 1 Lutcher-Moore Lbr. Co., B. Johnson Sur. T.D. 7,867 ft.; P.B.; sdtrkd.; 7-in. csg. 9,402 ft.; T.D. 9,705 ft.; D.S. stk.; P.B. 8,384 ft.; sdtrkd.; drlg. sh. 9,597 ft.

Waller County

Providence Oil Corp. No. 1 Ida Lee Muske, Jas. Perry Sur. 10¾-in. csg. 808 ft.

Washington County

Mount Selman Oil Co. No. 1 Fritz Fuelberg, John Lightfoot Sur. R.U.

Wharton County

R. B. Fields No. 1 Barker, John Huff Lge. (Boling dome deep test). T.D. 1,035 ft.; run csg.

S. W. TEXAS WILDCATS

Atascosa County

R. C. Stanley No. 1 Schumann, Simon

Malone Sur. No. 1069. T.D. 1,722 ft.; perf. csg. 1,650-75 ft.; perf. csg. 1,654-76 ft.; flwd. fresh wtr.; S.S.O.; S.D. prep. to reperf. csg.

Bastrop County

R. C. Franklin No. 2 Yarrington, Jose Manuel Bangs Sur. T.D. 2,132 t.; 7-in. csg. 2,008 ft.; S.D.
Marts & Beaven No. 1 Doherty, John Maxmillian Sur. S.D. 2,965 ft.

Bell County

M. M. Gordon No. 1 Steele, Oliver T. Tyler Sur. S.D. 1,201 ft.
G. P. Shelton et al No. 1 Nelson, Michael Griffin Sur. S.D. 1,160 ft.

Bexar County

H. G. Krumm No. 1 Kempf, Samuel Mc-Collough, Jr., Sur. No. 54. Drlg. 680 ft.
L. G. Priest et al No. 1 E. B. McCollough, Stephen Jett Sur. T.D. 1,004 ft.; bailed to bttm.; recvd. est. 25 gal. oil.
Charles Schreiner No. 1 McCloskey, L. Desague Sur. No. 134. 7-in. csg. 710 ft.; drlg. 1,169 ft.
David Stiles No. 1 Minna Sherrer, Jos Antonio de la Garza Sur. S.D. 1,044 ft.
Joe Wagner et al No. 1 Florence Lamm, Manuel De Luna Sur. No. 3. Drlg. 438 ft.

Blanco County

D. M. Johnston No. 1 Glasscock, W. W. McDonald Sur. No. 50. 10-in. csg. 150 ft.; S.D. 719 ft.
E. L. Nixon No. 2 Crist, John McClenechen Sur. No. 94. S.D. 210 ft.

Brooks County

Humble O. & R. Co. No. 2 McGill Bros., Ygnacios Rivas La Blanca gr. T.D. 4,-772 ft.; recvd. P.L.O.; D.S.T. 4,690-4,-738 ft.; tstg.
Southern Minerals Corp. No. 1 Proctor, Fel Furrias Farm & Garden Tracts. O.W.D.D.; T.D. 6,028 ft.; drlg. 6,119 ft.

Caldwell County

S. T. Dudley et al No. 1 Becker, L. L. Joseph Sur. T.D. 713 ft., chk.; 7-in. csg. 685 ft.; T.D. 1,117 ft.; Edw. L.; P.B. to test Austin chalk.

Calhoun County

Hiawatha O. & G. Co. No. 2 J. J. Roemer, J. Ogesberry Sur. T.D. 10.015 ft.; P.B. 8,550 ft.; perf. csg. 7,829-52 ft.; swbg.

De Witt County

Richardson et al No. 1 W. D. McCurdy, John Hunt Sur. T.D. 150 ft.

Duval County

Ark. Fuel Oil Co. and Taylor Ref. Co. No. 1 Hernandez, F. Hernandez Sur. No. 56. Drlg. sh. 3,532 ft.
J. W. Cosner et al No. 1 Cantu, Geraro Briones Sur. Loc.
Goldrus Drlg. Co. et al No. 1 Society for the Propagation of Faith, Pedro de La Zerda Sur., Sec. 7. M.I.M.
Gravis and Doran No. 1 Parr, San Andres gr., 1 mi. N of Sweden field. R.U.
Frank Gravis No. 3 Schallert, Seale, Morris & Seale Sur. No. 2550. Drlg. sh. 2,930 ft.
Porter and Blanchard No. 1 Yates, John Gray Sur. Loc.
Porter & Blanchard et al No. 1 Yates, John Gray Sur. Loc.
S.K.&C. et al No. 3 Welder, Nathaniel Tinsley Sur. Drlg. 2,485 ft.
W. A. Wagner No. 1 D. J. Welkel, John H. Gibson Sur. No. 497. R.U. and S.D.

Frio County

Hickock & Reynolds No. 1 San Antonio Joint Stock Ld. Bnk. Cg. sd. 2,636 ft.
Humble O. & R. Co. No. 2 Houston, Conrad Die Sur. 161. T.D. 5,151 ft.; abd. tstd. gas and S.W.

Goliad County

Steinberge Pet. Corp. No. 1 Albrecht, T. Hancock Sur. T.D. 5,313 ft.; 5½-in. csg. 5,313 ft.; perf. csg. 5,238-44 ft.; pulling tbg.; cmt. job gave way; drlg. out cmt.; to perf. csg. 4,804-32 ft.

Gonzales County

Hochheim Dev. Trust No. 1 Dubose, E. G. Coffman Sur. 10-in. csg. 37 ft.; S.D. 500 ft.
A. L. Mitchell and L. W. Sorrell No. 1 A. I. Culpepper. S.D. 1,150 ft.

Guadalupe County

Frank Glenn No. 1 Appling, Harriet Cottle Sur. No. 14. T.D. 2,218 ft.; tstg. 2,-130-37 ft.; 7-in. csg. 1,960 ft.; R.U. to pmp.
John Hueners et al No. 1 Bauer, R. E. Brown Sur. T.D. 1,462 ft.; C.O.
Joseph Holefield No. 1 Claud Brodnax, John King Sur. T.D. 2,231 ft.; swbd. salty sulfur wtr.
A. D. King No. 1-A Rosenbrock, Vincente Duran Sur. No. 4. T.D. 1,982 ft.; Buda L.; 6-in. csg. 991 ft.; swbg. and flwg. 3 B.O.P.H.; started showing S.W.; cmtd. off bttm. of hole; swbg.; I.P. 107 B.F.P.D., 87% S.W.; 13% 16.2-grav. oil; pmpg.
R. A. Williams No. 1 Weber, Guadalupe Torres Sur. T.D. 1,483 ft. (cor.); 4½-in. csg. 1,468 ft.; S.D.

Hidalgo County

R. E. Hardin et al No. 1 E. M. Car, Hidalgo Co. Canal Subd., Lot 8, Blk 8. T.D. 7,509 ft.; perf. csg. 7,440-65 ft.; tstd. 500,000 ft. gas, 9 bbls. dist.; W.P. 1,700 lbs.; killed well; reperf. csg. 6,918-30 ft.; tstd. dist.; reperf. csg. 6,515-25 ft.; sqzd. perf.; reperf. csg. 7,415-50 ft.; comp. as dist. producer.

Pan American Prod. Co. No. 1 J. De la Vina, Vicente Hinojosa gr. Drlg. 2,-400 ft.

Jim Hogg County

Humble O. & R. Co. No. 5 Bass, San Raphael gr. T.D. 4,771 ft.; 7-in. csg. 4,771 ft.; W.O.C.
Johnson & Robinson No. 1 Palacios Mary Montgomery Sur. Drlg. 1,565 ft. (cor.).

Jim Wells County

Ark. Fuel Oil Co. No. 1 Blinka, M. Marerra gr. T.D. 5,506 ft.; rmg.
H. H. Howell et al No. 1 W. T. Wright, Ross M. Bridges Sur. Drlg. sdy. sh. 846 ft.
H. H. Howell et al No. 2 Wright, A.&M G.R.R. Sur. R.U.
Magnolia Pet. Co. No. 1 Samuel Maun, Los Olmos y Loma Blanca gr. 7-in. csg. 6,314 ft.; drlg. 6,344 ft.
W. H. Mathews No. 1 Frances Clark, Los Precenos gr. 10¾-in. csg. 617 ft. cg. sdy. sh. 3,496 ft.
Shell Pet. Corp. No. 1 C. H. Von Blucher, Lucinda Best Sur. T.D. 7,332 ft.; 7-in. csg. 7,332 ft.; perf. csg. 7,327-30 ft.; drlg. sd. 7,555 ft.

Karnes County

Formax Oil Co. No. 1 Pflugger, Erasmus Seguin Sur. S.D. 1,969 ft.
Suttle et al No. 1 McKinney, Luz Navarette Sur. Drlg. sh. 3,849 ft.

Kendall County

Carpenter No. 1 Seldensticker, A. Rodriquez Sur. No. 257. S.D. 571 ft.
H. N. Reid No. 1 Marguardt, J. Travuso Sur. No. 150½. S.D. 985 ft.

Kinney County

Bob Rose No. 2 Gaebler, Dolores Soto de Beales gr. S.D. 300 ft.

Kleberg County

Pure Oil Co. No. 1 State, Tr. No. 155, R.U.

Lavaca County

A. C. McCord et al No. 1 Cora Russek, Blk. 33, J. C. Reynolds Sur. (S. of Ezzell). S.D. 250 ft.

Lee County

Fred Pederson et al No. 1 Brown, David Hudson Sur. T.D. 6,404 ft.; acd.; R.U. to pmp.

Live Oak County

R. H. Feltner No. 1 Reed, I.&G.N. R.R. Sur. 15. R.U.

McMullen County

Cities Service and Continental Oil Co. No. 1 Lowe, Henry Blood Sur. R.U.
Holbrook and O'Farrell No. 1 Miles, J. Poitevent Sur. Loc.
R. P. Holland et al No. 1 Gayle, B.S.& F. Sur. Drlg. sdy sh. 1,236 ft.

Maverick County

Wellington Oil Co. of Delaware and Humble O. & R. Co. No. 2 Indio Cattle Co. Antonio Rivas Grant. Cuevas Pasture No. 2. T.D. 3,013 ft.; abd.

Medina County

Victor Ziegler No. 1 Paul Haby, Wm. G. Still Sur. No. 1. S.D. 875 ft.

Milam County

McGuyer and McCormick No. 1 Jacob Jose Leal Sur. S.D. 695 ft.

Nueces County

Heep Oil Corp. et al No. 1 G. W. Smith Jose Vicente Lopez de Herrera gr R.U.
O. W. Killam No. 1 H. F. Hoegmeyer, E. L. Rincon de Corpus Christi gr. 10¾-in. csg. 1,076 ft.
Renwar Oil Co. et al No. 1 Eschberger Nueces River Irrig. Park subd. T.D. 7,418 ft.; rmg.
Seaboard Oil Co. No. 2 Wilson, Jose Vincente Lopez de Herrera Sur., Blk. 9. 13⅜-in. csg. 1,551 ft.; cg. sh. 4,429 ft.
Union Prod. Co. No. 1 Minnie Brown (Agua Dulce area). T.D. 10,723 ft.; P. B. 6,885 ft.; perf. csg. 6.850 ft.; tstg

Real County

Blakely Smith et al No. 1 Love Ranch, H.E.&W.T.R.R. Co. Sur. S.D. 310 ft.

Refugio County

Phillips Pet. Co. et al No. 1 Emilie Paveleck, Aldrete 6¼ Lge. Drlg. sh. 6,-110 ft.
Shields Oil Co. et al No. 2 Sasse, Sec. 3, Bonnie View subd. T.D. 6,343 ft.; 5½-in. csg. 6,343 ft.; comp.; no ga.

Starr County

Rhinehart and Bowman No. 1 Bowman, J. C. McCarty Sur. Loc.
Sun Oil Co. No. 3 McKinney, A. J. Smith Sur. No. 242. T.D. 5,068 ft.; perf. csg 4,660-70 ft.; I.P. 119 B.P.D.; ⅛-in. ck.
Sun Oil Co. No. 4 McKinney, A. J. Smith Sur. No. 240. Loc.
Sun Oil Co. No. 1 N. R. Montalvo, Los Retaches gr., Juan Jose Sais Sur. No. 347. T.D. 5,131 ft.; perf. csg. 4,855-68 ft.; I.P. 152 B.P.D.; ⅛-in. ck.
Sun Oil Co. No. 1-B Montalvo, Los Retachez gr. Loc.

Victoria County

H. L. Edwards No. 1 Strobe, J. M. Cobarrubias Sur. Drlg. sh.&L. 5,048 ft.

Webb County

Harvey & Henderson No. 2 Benavides, J. Poitevent Sur. No. 459. T.D. 3,510 ft.; abd.

Magnolia Pet. Co. No. 1 Duval Co. Rnh. Co. Drlg. sh. 2,090 ft.
Richardson Pet. Co. No. 1 A. M. Bruni, H.&G.N.R.R. Sur. No. 17. Drlg. sh. 1,-566 ft.

Williamson County

L. B. Burnette, Jr., Tr., No. 1 D. C. Reed, E. Leichtle Sur. S.D. 1,045 ft.

Zapata County

C. H. Lewis et al No. 1 Flores, Charco De La India gr. R.U.

EAST TEXAS

(Border Counties)

Harrison County

F. H. Barnwell No. 1 Smith, A. P. Hope Sur. Cg. 2,830 ft.; D.S.T. 2,280 ft. tstd. dry; ran 5-in. csg. 2,300 ft.
W. S. King No. 1 Taylor, Martin Sur S.D. 3,180 ft.

Marion County—Rodessa

Ark.-La. Gas Co. No. 1 E. Crawford, A D. S. Coy Sur. Cg. 6,080 ft.
Gulf Prod. Co. No. 2 Blake, J. N. Jackson Sur. Drlg. anhy.&sh. 5,340 ft.
G. Scott Hammond No. 1 W. S. Ford, C Grayson Sur. 9⅝-in. csg. 1,262 ft.; csg. seat would not hold; T.D. 6,189 ft.; set 5½-in. csg. 6,007 ft.; W.O.C.
Hollandsworth Drlg. Co. No. 2 Hurst, SW cor. lse., J. Hanks Sur. Drlg. sh. &L. 5,168 ft.
Shell Pet. Corp. No. 1 Stephenson, G. Perry Sur. 8⅝-in. csg. 1,013 ft.; 5-in. csg. 5,991 ft.; perf. 5,973-80 ft.; flwd. 2B.P.H.; set flow valves and tstg.
Shell Pet. Corp. No. 2 Whelan, Thos Gillespie Sur. 5½-in. csg.; T.D. 5,992 ft.; csg. split 3,790 ft.; sqzd. off.
Texas Co. No. 3 Braden, J. N. Fitzgerald Sur. Set 7-in. csg. 6,023 ft.; perf 5,991-6,008 ft.; arng. acdz.
Texas Co. No. 1 Chatten, Wm. Meyers Sur. Set 9⅝-in. csg. 2,106 ft.; drlg. sh. &L. 3,914 ft.

Marion County—Other

Tom Bell No. 1 Moseley, D. Lane Sur. Swbd. some oil; pig. tbg. 2,200 ft.
Capps Bros. Lbr. Co. No. 2 Stiles, Wall Sur. T.D. 2,394 ft.; swbd. dry; shot with 2 qts. nitro at 2,334 ft.; tstd. dry; S.D. 2,394 ft.
S. L. Fulton et al No. 1 Burks, G. Coor Sur. Spdg.

Sabine County

Hugo Allen No. 1 Brooks, Isaac Low Sur. S.D. 5,885 ft.; flows ½ to 3 bbls. 41-grav. oil and goes dead; C.P. 500 lbs.; will attempt to comp. as gas well.

San Augustine County

Superior Oil Co. et al No. 1 Long Bell Lbr. Co., S.P.R.R. Sur. 10¾-in. csg. 440 ft.; T.D. 5,102 ft.; S.D.

WEST TEXAS WILDCATS

Andrews County

Atlantic and Standard No. 1-B Cowden, Sec. 1, Blk. 14, T.&P. Sur. U.R. 300 ft.; drlg. 1,660 ft.
Honolulu Oil Corp. No. 1-18 J. E. Parker, Sec. 18, Blk. A-44, P.S.L. Sur. R.U.S.T. 4,440 ft.
Olson Drlg. Co. No. 1 Lockhart-Brown 5 mi. W of S end of Fuhrman pool S.D.O. 4,981 ft.
Richmond Drlg. Co. No. 1 Bryant-Link, Sec. 7, Blk. 48, P.S.L. Sur. Drlg. 1,700 ft.
Rogers & Rogers No. 1-B University, Sec. 20, Blk. 9, Univ. Sur. S.D.O. 4,-431 ft.; no shows.
J. W. Tripplehorn No. 1 M. A. Thornberry, Sec. 2, Blk. 42-A. Tstg. 5 to 10 B.O.P.D.; 4,468 ft.

Cochran County

T. G. Shaw No. 1 Carrie S. Dean, Lge. 94. S.D.R. 4,342 ft.

Coke County

Barnett Pet. Co. No. 1 J. R. Mims, Sec 39, Blk. W, T.&P. Sur. S.D. 1,861 ft.

Crane County

Great Western Prod. No. 1-B Univ., Sec. 5, Blk. 30, Univ. Sur. Loc.
Gulf Oil Corp. No. 5 M. B. McKnight, Sec. 1, Blk. 21-B, P.S.L. Sur. Loc.
Magnolia Pet. Co. No. 12 W. P. Edwards, Sec. 12, Blk. 23-B, P.S.L. Sur. Drlg. 1,140 ft.
Magnolia Pet. Co. No. 1-18 University, Sec. 18, Blk. 30, Univ. Sur. Drlg. 650 ft.
Standard O. of Texas No. 1-4 University Sec. 4, Blk. 30, Univ. Sur. Drlg. 1,-850 ft.

Crockett County

Hanson & Anderson No. 1 W. T. Knoelke, Sec. 30, Blk. GG, H.E.&W.T. Sur. M.I.M.
Humble No. 1 Ozona-Barnhart, Sec. 4, Blk. M-N, G.S.&F. Sur. Drlg. 280 ft.

Culberson County

Harry Niehaus No. 1 Caldwell, Blk. 109. Sec. 13, P.S.L. Sur. Drlg. 2,955 ft
Quito Oil Co. No. 1 Cameron Lbr. Co., Sec. 24, Blk. 81, P.S.L. Sur. S.D.h. 945 ft.

Dawson County

Daw-Tex. Oil No. 1 J. E. Neely, Sec. 28 Blk. 35, T.&P. Sur. Drlg. 3,291 ft.

Dickens County

Bond D. Jones No. 1 Ford et al, I.&G.N. Sur. W.O. csg. 3,508 ft.

Humble O. & R. Co. No. 1 Matador Ld. & Cattle Co., Sec. 26, Blk. 1, Shock & Arnold Sur.; 6,000-ft. test. W.O.C. 3,-527 ft.

Ector County

Harry J. Brown No. 1 J. M. Gist, Sec. 9, Blk. 42, T.&P. Sur. Drlg. 3,985 ft.; last report.

El Paso County

Tri-State Oil Co. No. 1 Kinkel. S.D. 3,-571 ft.

Garza County

Gulf Oil Corp. No. 1 Swanson, Sec. 25, Blk. 2, H.&G.N. Sur. Flwd. 148 B.O. in 9 hrs.; P.B. depth of 7,400 ft.; P.B. 6,821 ft.; tstd. S.W.; prep. P.B. again.

Hockley County

S. W. Richardson No. 1 A. E. Coe, Lbr. 53, Lge. 40, Maverick C.S.L. Sur. R. U.R.

Hudspeth County

Haymon Krupp Oil & Ld. Co. No. 1 Thaxton, SE¼ Sec. 34, Blk. 74, Twp. 6. Drlg. 5,527 ft.
Haymon Krupp No. 1 Briggs, Sec. 24, Blk. 73, Twp. 7, T.&P. Sur. W.O.C. 5,365 ft.

Irion County

Clyde Crabb No. 1 W. M. Boelke, Tom Green C.S.L. Sur. Loc.

Jeff Davis Parish

H. D. Wilcox No. 2 Jones-Coffield, Sec. 308, Blk. 4, H.&T.C. Sur. Drlg. 620 ft. last report.

Lynn County

John L. Baldridge No. 1 Alma Lbr. Co., Sec. 151, H.E.&W.T. Sur. W.O.C. 4,-450 ft.

Martin County

T. G. Shaw No. 1 Wilkerson, Sec. 35-A, B.&C. Sur. Drlg. 3,600 ft.

Mitchell County

Ajax Drlg. Co. No. 1 Schustes, Sec. 25, Blk. 17, S.P.R.R. Sur. Drlg. 3,495 ft.

Pecos County

G. T. Abell et al No. 1 Baldwin Est., Sec. 24, Blk. 9, H.&G.N. Sur. S.D.O. 2,400 ft.
J. R. Bell No. 1-C Gulf-Shearer, Sec. 11, Blk. 10, H.&G.N. Sur. S.D.O. 1,-992 ft.
Childress Royalty No. 1 Humble-Shearer, Sec. 103, Blk. 10, H.&G.N. Sur. Drlg. 720 ft.
O. E. Schade No. 1 Neville, Sec. 72, Blk. 194, G.C.&S.C. Sur.; 2,500-ft. test. Fsg. bit 2,035 ft.
O. E. Schade No. 1 Otis Garrett, Sec. 59½, Blk. 8, H.&G.N. Sur. Drlg. 505 ft.
Thomason Prod. Co. No. 1 Notions, Sec. 1, Blk. 105, W. P. Howard Sur. S.D.R. 1,020 ft.
S. Thompson No. 1 Elsinore Cattle Co., Sec. 54, Blk. D, G.C.&S.F. Sur. S.D.O. 7,342 ft.
J. C. Trees No. 1 fee, Sec. 63, Blk. 8, H.&G.N. Sur. M.I.R.

Reeves County

Artie Baker No. 1 J. W. Grider, Sec. 31, Blk. 58, P.S.L. Sur. Rng. csg. 320 ft.

Schleicher County

Lone Star Gas Co. No. 1 Bert Page, Sec. 30, Blk. L, G.H.&S.A. Sur. Drlg. 1,-596 ft.
Lone Star Gasoline Co. No. 2 Bert Page, Sec. 46, Blk. L, G.H.&S.A. Sur. Rng. 12-in. 715 ft.

Scurry County

Coffield & Guthrie No. 1 First Natl. Bk., Snyder, Sec. 29, Blk. 97, H.&T.C. Sur. M.I.R.
Forest Dev. Co. No. 1 J. J. Koonsman, Sec. 217, Blk. 2, H.&T.C. Sur. Drlg. 3,-702 ft.

Tom Green County

Southern Cross No. 1 Upton & Upton, Sec. 20, Blk. A, A.B.&M. Sur. Loc.
Spinner No. 1 Reed, Mason Ferry Ranch Sur. W.O.C.; cave 4,948 ft.
Tom Green Oil Co. No. 1 Schreiber, A. Krending Sur. No. 1663. Loc.

Upton County

White & Wilson No. 1 Webb, Sec. 176, Blk. 1, C.C.S.D.&R.G.N.G. Sur. U.R. 715 ft.

Ward County

Edwards & Donnelly No. 1 J. S. Reynolds, Sec. 34, Blk. 1, H.&T.C. Sur. Tstg. 1,-835 ft.; flwd. est. 80 B.O.P.D.
Robt. E. Mitchell No. 1 Allen, Sec. 7, Blk. 32, H.&T.C. Sur. P.B. 2,158 ft.; tstg.

Yoakum County

Honolulu Oil No. 10-695 R. Bennett, Sec. 695. Loc.
Shell Pet. Corp. No. 1 C. A. Hudson, Sec. 834. Bldg. drk.
Shell Pet. Corp. No. 1 J. M. Rutts, Sec. 743. P.B. 5,240 ft.; flwd. est. 40 B.O. P.D.

WEST CENTRAL TEXAS DISTRICT

Brown County

A. D. Bruce No. 1 L. J. Mauldin, Sec. 15, H.&T.C. Sur. Sp.&S.D.
Evans No. 1 J. F. Davis, S. Tull Sur. No. 894. Spd. and S.D.

Callahan County

Dobbs Oil Co. No. 1 Finley, Sec. 75,

Bayland Orphans Home Ld. Fsg. tools 1,785 ft.
J. C. Jackson and Doug. Tomlingson, Jr., No. 1 T. J. Thompson, Sec. 30, B.B.B. &C. Sur. Prep. U.R. 1,815 ft.
Roeser & Pendleton No. 1 Chas. Yost, Sec. 18, Blk. 8, S.P. Sur. Drlg. 3,162 ft.

Coleman County

Arcadia Ref. Co. No. 1 W. R. Roberts D. J. Holt Sur. S.D. 2,904 ft.
P. A. Graves No. 1 F. Gillespie, N. B. Walters Sur. D.&A. 2,380 ft.
E. E. Kirkpatrick No. 1 F. Nixon, Burnett C.S.L. Sur. Drlg. 2,200 ft.

Comanche County

Comanche O. & G. Co. No. 1 J. E. McGuire, C. Rockefeller Sur. No. 3. Drlg. 2,213 ft.
O. L. Johnson No. 1 Mrs. W. Jones, Sec. 34, H.&T.C. Sur., Abst. 1610. C.O. 2,835 ft.
Loraine No. 1 Carlisle, Sec. 9, Blk. 2, H.&T.C. Sur. S.D. csg. 2,601 ft.

Eastland County

Dobbs Oil Co. No. 1 Greer, J. E. Hardy Sur., Ellenburger test. S.D. 1,738 ft.

Erath County

Wayne Chandler No. 1 Chandler, J. W. Moore Sur., Abst. 571. S.D. 3,820 ft.
Collard No. 1 W. L. Payton, H. Pierson Sur. No. 1, Abst. 1105. S.D. 185 ft.

Fisher County

General Crude No. 1 M. M. Flores, Sec 212, Blk. 1, B.B.B.&C. Sur. S.D. 3,010 ft.

Hamilton County

Wallace & Vickers No. 1 C. C. Lund, J. P. Bailey Sur. 51. Fsg. bailer 2,200 ft.

Haskell County

Sawyer Drlg. Co. No. 1 A. J. Rowland Est., Sec. 5, Blk. 3, H.&T.C. Sur., 15 mi. E of Stamford. P.B. 4,900 ft.; tstg.

Hood County

Prince & Miller No. 1 J. H. Andrews, NW cor. of Geo. Sutherland Sur. S.D. 524 ft.

Jones County

Brown Eagle No. 1 Waterson, Andrews Sur. No. 191. T.D. 2,283 ft.; S.D.
Grover, Rose & Farrell No. 1 O. D. Swanson, Sec. 193, B.B.B.&C. Sur., 2 mi. NE of Avoca. Drlg. 2,312 ft.
Hedrick Oil Co. No. 1 S. T. Morrison, Sec. 137, Martinez Sur. Drlg. 1,820 ft.
Lucille Manley No. 1 fee, Sec. 4, Blk. 15, T.&P. Sur. T.D. 1,892 ft. in sd.; U.R.
J. H. Sproules No. 1 James Nichols, Sec. 47, Blk. 16, T.&P. Sur. Drlg. 1,011 ft.

Nolan County

Chas. E. Peddicord No. 1 Tipton, Sec. 43, Blk. 19, T.&P. Sur. S.D.O. 2,827 ft
Union Oil Co. No. 1 J. D. Pepper, Sec. 51, Blk. 21, T.&P. Sur.; 5,000-ft. test. 6 mi. SW Sweetwater. U.R. 3,850 ft.

Parker County

Brown-Gardner Bros. No. 1 Gilbert, T.& P. Sur., Abst. 1958. S.D. 2,200 ft.
Glen Rose No. 1 H. D. Groves, SW¼ Sec. 350, T.&P. Sur. S.D.; T.D. 685 ft.

Shackelford County

Joe DeGrazier No. 1 Harbough, E cen. part of county, Sec. 1563, T.E.&L. Sur. 4,500-ft. test. S.D. 3,894 ft.
Fox & Rudd No. 1 Shotwell, Sec. 59, B.A.L. Sur. Fsg. 1,632 ft.
R. H. Gordon and Frank Pethybridge No. 1 C. B. Snyder, 330 ft. fr. N and E lines, Sec. 38, L.A.L. Sur.; 4,500-ft. test. Est. 20 to 50 B.O.P.D.; T.D. 3,660 ft.; S.D. 4,293 ft.

Throckmorton County

Beacon O. & R. Co. No. 1 Hawes Est., Sec. 979, T.E.&L. Sur. Drlg. 4,306 ft.; last report.

TEXAS PANHANDLE

Collingsworth County

C. H. Mee and C. F. Anderson No. 1 V. K. McCaskill, Sec. 18, Blk. 16, H.&G. N. Sur. Drlg. 368 ft.
White No. 1 Wischamper. Drlg. 2,300 ft.
Johnson No. 1 Taylor. Drlg. 2,310 ft.

Deaf Smith County

Uscan No. 1 Farwell. S.D. 5,650 ft.

Donley County

Robinson No. 1 Kuteman, Sec. 88, Blk. 20, H.&G.N. Sur. Drlg. 4,103 ft.

Gray County

English No. 1 Eudy. S.D. 3,977 ft.
Trippiehorn No. 2 Webb, Sec. 12, Blk. A-9, H.&G.N. Sur. R.U.S.T.

Lipscomb County

M. C. Tieman No. 1 Spandle, Sec. 626, Blk. 43, H.&T.C. Sur. S.D. 1,880 ft.

Potter County

Sinclair Prairie Oil Co. No. 1 Bush, Sec. 23, Blk. 6, B.S.&F. Sur., about 3 mi. N of Amarillo; 8,500-ft. test. Drlg. 6,100 ft.

Roberts County

Whitlock No. 1 Cunningham. Drlg. 3,400 ft.

E. C. TEXAS WILDCATS

Angelina County

K. L. McHenry No. 1 Humble-fee, T.E. R.R. Sur., ½ mi. SE of Zavalla. Drlg. 2,365 ft.

Cherokee County

C. C. Lanier No. 1 A. T. O'Neal, J. M. Procella Sur., 3 mi. E of Troup. S.D. 50 ft.

Collins County

G. L. Pace Pet. Co. No. 1 E. E. Hooper, J. Rutherford Sur., 2 mi. E of Blue Ridge. D.&A. 2,757 ft.

Falls County

W. H. Mahon No. 1 V. H. Moore, N. K. Robinson Sur., between Lott and Rosebud. D.&A. 330 ft.
R. L. Seastrunk No. 1 J. B. Trewitt, J. A. Manchaca Sur., 4 mi. E of Chilton. S.D. 100 ft.

Grayson County

Denver Prod. & Ref. Co. No. 2 Cannon, E., Barnes Sur., 1½ mi. NW of Whitesboro. D.&A. 2,512 ft.
Denver P. & R. Co. No. 3 Cannon, E. Barnes Sur. No. 43, 1 mi. NW of Whitesboro. Loc.
F. H. E. Oil No. 1 Graham, Chas. Quillen Sur., 1 mi. S of Collinsville. Loc.
Jim McMurrey No. 1 Dr. T. J. Long, J. Garland Sur., 2 mi. S of Collinsville; 4,000-ft. test. S.D.O. 3,929 ft.

Henderson County

Tide Water-Seaboard-Humble No. 1 Sadie Starr McGee, R. Acosta Sur., 3¼ mi. NE of Murchinson. Tstg. 8,090 ft.

Houston County

Cook & Mayo No. 1 C. A. Walling, B. Parker Sur., 4 mi. N of Grapeland. R.U.
John G. Mayo and Cook No. 1 J. H. Klob, Fred Hemmeger Sur., 2 mi. N of Grapeland. D.&A. 6,141 ft.
John G. Mayo and Cook No. 1 Ida Walling, Ben Baker Sur. Loc.

Kaufman County

Sam Knoerr No. 1 J. B. Hunter, P. Walker Sur., 5 mi. S of Terrell. Drk.

Lamar County

Dahl Bros. & Barr No. 2 McQuiston, R. Russell Sur., ½ mi. N of Paris. S.D 30 ft.

McLennan County

C. E. Porter No. 1 B. D. Burchett, De la Vega Sur., just SE Waco. S.D. 695 ft.

Navarro County

Guy Sitton No. 1 J. P. Fortson, T. J. Chambers Sur., 4 mi. E of Alma. Loc.

Rains County

McKinley & Hastings No. 1 McTaggert, S. Muder Sur., 1 mi. W of Emory. S.D. 30 ft.

Red River County

Bentley-Sheppard & Stevens No. 1 So. Pine Lbr. Co., G. S. Parks Sur., 17 mi. N of Clarksville. S.D. 71 ft.

Rusk County

Ham & Baggs No. 1 A. Griffin, J. Randolph Sur., 4½ mi. NW of Mt. Enterprise. Loc.

Smith County

J. H. Thomason No. 1 J. W. Bartlett, R. H. Stewart Sur., ½ mi. SE of Jamestown. S.D. 1,802 ft.; S.L.M.

Trinity County

C. D. Davis No. 1 J. D. Gibson, A. Donavan Sur., 4 mi. NE of Trinity. Gas blowout 148 ft.; S.D. 2,627 ft.

Upshur County

R. E. L. Johnson No. 1 Lizzie Parker, John B. Gay Sur. Drlg. 2,617 ft.

Van Zandt County

F. A. Richardson No. 1-A B. C. Dodd, T. W. Hutchinson Sur., 2 mi. S of Grand Saline. Loc.

NORTH TEXAS WILDCATS

Archer County

Birdwell Oil Co. No. 31-B Oil Inv. Co., Lot 2, John Richards Sur., 5 mi. NW of Archer City; 4,200-ft. test. Spd.
W. B. Omohundro No. 1 T. B. Wilson, Sec. 5, H.&T.C. Sur. Spd. and S.D.
L. Sikes No. 1 Walter Ford, T. M. Cecil Sur. A-982. T.D. 4,204 ft.; O.W.D.D. to 5,500 ft.; T.D. 4,437 ft.; B.S.S.O. 4,379-4,400 ft.; cmt. 5½-in. liner on bottom bailing mud; tstg.
Westmount Oil Co. No. 7 T. J. Dempsey, Sec. 10, D.C.S.L. Sur., O.W.D.D. Perf. csg. 4,139-44 ft.; blg. wtr. and tstg.

Baylor County

British American Oil Prod. Co. No. 1 F. C. Green, T.&N.O. Sur., Sec. 215. Blg. est. 20 B.O.P.D. from 2,550-2,600 ft.; 6⅝-in. 2,579 ft.; sat. L. 2,579-2,635 ft.; P.B. 2,635 ft.; est. 550 bbls. on pump; W.O.T.

Clay County

L. T. Burns No. 1 Browning, Sec. 94, Belcher Sub.; 5,000-ft. test. Loc.

Cooke County

H. W. Caudle No. 1 E. E. Walker, H. Gilman Sur.; 5,500-ft. test. Setting surface pipe; R.U.R.
Sinclair Prairie No. 3 J. M. Best, T. Toby Sur. A-1054. Drlg. 2,615 ft.
Whitfield et al No. 1 B. Voth, Z. D. Fulton A-1250 Sur. 6⅝-in. 1,595 ft.; 5½-in. 1,793 ft.; sat. L. 1,783-93 ft.; est. 500 bbls.; 10 hrs.; S.D. for test.

Foard County

Fleetwood & Kaufman No. 1 Prowers, H.&T.C. Sur., Blk. A. S.D.O. 5,005 ft.

Grayson County

O. L. McDougal No. 1 Jackson, H. Coffee Sur., Abst. 204; 4,000-ft. test. Fsg. 562 ft.
J. H. McMurray No. 1 T. J. Long, Jas. Garland Sur. A-441. S.D.O. 3,929 ft.; ran Schlumberger; S.S.O. 2,595-2,601 ft.
C. E. Marshall No. 1 F. Christman, M. Ahalt Sur. A-147. S.S.O. 830-38 ft.; tstg.

Jack County

Noah Daves No. 1 K. D. Baker, Sec. 2709, T.E.L. Sur.; 4,000-ft. test. Recmt. 10-in. at 90 ft.; S.D.O. 2,320 ft.
Pitzer & West No. 1 F. Warren, Sec. 2784, T.E.&L. Sur. Drlg. 690 ft.

Montague County

Benton & Holmes No. 1 J. Bowers, Sec. 55, M.E.P.&P. Sur. S.S.O. 2,887-95 ft.; setting 6⅝-in. csg.; to test.
Lobban et al No. 1 Henry Payne, Wm. Donoho Sur. A-178. S.D. 1,130 ft.
Youngblood & Foree No. 1 J. A. Burnett, J. Lenow Sur. A-433. 4¾-in. 4,638 ft.; O.S. 4,640-56 ft.; flowed 87 bbls. in 3 hrs.

Wichita County

L. T. Burns No. 1 Browning, Sec. 94, Belcher Supr.; 5,000-ft test. Loc.
F. S. Freeland No. 1 J. D. Cooper, H. Hastie A-92; 4,000-ft. test. Spd. and S.D.

Wise County

H. Jackson No. 1 F. Neeley, Blk. 29, Matagorda Co. Sch. Ld. Spd. and S.D.
H. M. Muse No. 1 F. F. Kaker, Blk. 16, Matagorda Co. Sch. Lds. Pits.

Wilbarger County

Humble O. & R. Co. No. 1 T. J. Milner, Sec. 31, H.&T.C. Sur., Blk. 9; 3,000-ft. rotary test. Loc.

Young County

H. M. Leidecker No. 1 J. M. Nall, Sec. 1997, T.E.&L. Sur. Drlg. 810 ft.
Long & Lupton No. 1 A. Crouch, I.&G. N. Sur. A-1460. 6⅝-in. 3,865 ft.; sat. L. 3,940-44 ft.; treating with acid.
Magnus & McLester No. 1 B. B. Teague, E. S. Colthrop Sur. A-1390. Drlg. 2,895 ft.
Pitzer-West No. 1 Robt. Bulloch, J. P. Hume Sur., Abst. 140. 5½-in. 4,169 ft.; O.S. 4,338-39 ft.; flwd. 150 bbls., 1 hr.; W.O.T.

Eastern Fields

(Continued from Page 74)

rigged up on the R. R. Boggess farm. In Washington district, Godfrey L. Cabot, Inc., is drilling at 5,022 feet on the Jones & Walker lease.

In Pleasants County, Columbian Carbon Co. is underreaming at 4,729 feet on the Giles Hammat farm in Grant district. In Harris district, Wood County, Potter Development Co. is drilling at 5,812 feet in deepening on the W. H. Orem farm.

New Work

In Cabell County, Big Two Mile Co. has a location on the W. W. Conner farm in Grant district, elevation 915 feet. Here, R. H. Adkins is drilling at 3,430 feet in the R. L. Johnson test. In McComas district, West Virginia Gas Corp. has a location on the Claude and Mary Keyser farm, elevation 584.4 feet and Elkins Gas Corp. is down 950 feet on the Leonard Paugh one acre tract.

In Lincoln County, Harmon Gas Co. has a location on the Osa Lovejoy Turley farm, elevation 780 feet, Jefferson district. In Union district, Woodall Gas Co. is deepening on the James P. Plumley farm and drilling at 2,400 feet.

In Mingo County, Red Jacket Oil & Gas Co. has a location for No. 6 Red Jacket Coal Corp. in Harvey district. In Putnam County, Teavee Oil & Gas Co. is rigging up on the W. E. Irwin farm.

In Pleasants County, G. S. M. Powell Farm Oil Co. has a location for a second test on the D. P. Carder farm in Jefferson district, the test on this farm being a large producer. This company has a location also for a second test on the G. S. M. Powell farm 700 feet northeast of No. 1 and 435 feet west of the above location. In this district, Schultz Oil Co. has a location on the T. C. Hammett Heirs farm, elevation 1,017.5 feet. In Lafayette district, H. W. Riggs and others have started drilling a second test on the C. T. Simonton farm. In McKim district, C. F. Vincent has a location on the J. E. Nichols farm, elevation 842.7 feet.

In Ritchie County, W. A. Bickerstaff has a rig up on the R. E. Britton farm in Union district. This was the former Charles Nutter farm on which there were three gas wells. In this district, Moats & Parker have a rig up on the Spencer Fowler farm.

In Wetzel County, James Prunty has location on Lot 33 and 34 in Proctor, Proctor district, elevation 635 feet.

East Texas Fields

(Continued from Page 69)

EAST TEXAS FIELD COMPLETIONS

Gregg County—Longview Area

Kewanee Oil No. 31 Hampton, 3,522-52 feet, 84 bbls.

Gregg County—Kilgore Area

A. F. Anding No. 2 G. Martin, 3,535-60 feet, 80 bbls. Gulf Oil Corp. No. 20 Walton, 3,560-67 feet, 50 bbls. T. W. Lee No. 20 J. R. Carter, 3,596-97 feet, 40 bbls. Sun Oil Co. No. 59 M. T. Cole, 3,522-42 feet, 46 bbls.

Rusk County—Kilgore Area

General American Oil Co. No. 19-B W. L. and S. M. Williams, 3,623-26 feet, 60 bbls. Humble Oil & Refining Co. No. 186 L. D. Crim, 3,699-3,711 feet, 75 bbls. Magnolia Petroleum Co. No. 19 N. Bean, 3,530-3,600 feet, 12 bbls.

Rusk County—Joiner Area

Humble Oil & Refining Co. No. 51-A S. A. Plowman,, 3,672-82 feet, 78 bbls.; No. 21 A. L. Walker, 3,638-3,640 feet, 80 bbls.; No. 38 J. H. Wooley, 3,630-71 feet, 80 bbls. Ohio Oil Co. No. 25 C. L. Graham, 3,618-3,715 feet, 34 bbls.

Upshur County—Longview Area

B. F. Phillips No. 10 L. J. Everett, 3,664-05 feet, 6 bbls.

NORTH TEXAS COMPLETIONS

Archer County

Jack Latson No. 1 J. M. Haytor, 1,400 feet, dry. N. H. Martin No. 2 J. Stehlik, abandoned location. Raeline Oil Co. No. 1 D. W. Fish, abandoned location.

Clay County

Bridwell Oil Co. No. 25 T. C. Thornberry, 350-56 feet, 12 bbls. Sussex Oil Corp. No. 17 C. J. Shumake, 1,136-52 feet, 14 bbls.

Cooke County

Grayburg Oil Co. No. 6 Ben Luke, 1,797 feet, dry. Hutton and others No. 1 F. Truebenbach, 815-21 feet, 60 bbls.

Jack County

Nelson Oil Syndicate No. 8 J. P. Eatherly, 2,750-

2,800 feet, 175 bbls. H. R. Lippett No. 1 S. Franklin, 5,060 feet, dry.

Wichita County

Bridwell Oil Co. No. 1 Sue Mitchell, 3,825-56 feet, 840 bbls. Continental Oil Co. No. 5-B J. L. and T. Waggoner, 3,780-94 feet, 368 bbls. E.C. Oil Co. No. 8 Mrs. Anna Mangold, 3,823-31 feet, 1,248 bbls. P. G. Lake No. 3 M. E. Reilly, 3,883-3,945 feet, 1,200 bbls. Mogren & Anderson No. 10 C. A. Mertens, 1,015 feet, dry.

Young County

P. Atchley No. 12 S. M. J. Benson, 897-925 feet, 50 bbls. Cable Oil Co. No. 8 J. Williams, 566-69 feet, 10 bbls. S. D. Glover No. 24 C. W. Johnson, 616 feet, dry. A. T. Strong No. 1 Ed Bradshaw, 3,962-4,003 feet, 2,400 bbls. H. Zweifel No. 1 W. H. Martin, 2,508-18 feet, 11,000,000 cu. ft. of gas.

Illinois Fields

(Continued from Page 66)

der, SW NW NW Section 27-6s-6w, total depth 1,680 feet, running 6⅝-inch casing.

In White County, Pyramid Petroleum Co. No. 1 Gilbert Wade, SE SE NE Section 4-7s-8e, drilling at 2,519 feet.

In Jackson County, Ben Banner No. 1 Dean, NE NE SE Section 33-7s-3w, drilling at 1,005 feet.

In Gallatin County, Bailey and Lucas No. 1 Logan, SW cor. NE NE NE Section 21-8s-8e, set 10-inch casing at 1,594 feet and shut down at 1,760 feet.

CENTRAL OHIO

LIMA, Ohio, Jan. 16.—Central Ohio operators have been focusing most of their attention on gas production, and last week 10 gas wells and four dry holes were completed. Three of the wells yielded better than 1,000,000 cu. ft. each per day.

In Athens County, Lodi Township, Bowman Oil & Gas Co. No. 2 James Rogaski, Section 11, had an open flow of 120,000 cu. ft. from the second Berea sand at 1,682-94 feet. In York Township, Hocking Valley Drilling Co. No. 13 Hocking & Athens Coal Co., Section 35, was abandoned at 1,210 feet.

In Coshocton County, Perry Township, Bell Brothers No. 2 Howard Wilt, Section 6, is a small Berea sand gas well; total depth, 919 feet.

In Cuyahoga County, Mayfield Township, Benedum Trees Co. No. 1 Wise, Lot 24, had an open flow of 1,800,000 cu. ft. from the Newburg sand at 2,777-2,818 feet.

In Holmes County, Hardy Township, Lydic Oil & Gas Co. No. 1 William Straits, Section 16, is a small gas well in the second Berea sand at 734-42 feet. In Washington Township, Ohio Fuel Gas Co. No. 1 John M. Wiseman, Section 18, is good for 1,900,000 cu. ft. open flow from the Clinton sand; total depth, 2,964 feet.

In Lorain County, Carlisle Township, Ohio Fuel Gas Co. No. 1 William Pfeiffer, Section 23, was abandoned at 2,388 feet. The Clinton sand was missing.

In Monroe County, Summit Township, J. E. Lumbatis No. 1 Mary Baker, Section 5, had 200,000 cu. ft. open flow from Keener sand at 1,390-1,405 feet.

In Morgan County, Deerfield Township, Pierce Co. No. 1 H. H. Banks, Section 20, was completed as a small gas well; total depth, 1,226 feet. In Homer Township, D. T. Orndorff No. 3 Sarah V. Dale, Section 2, is a small second Berea sand gas well at 1,366-74 feet.

In Muskingum County, Union Township, Atha Realty Co. No. 1 Foster McGee, Section 15, was abandoned at 4,615 feet; Clinton sand was found at 4,413-68 feet with a small show of gas at 4,415 feet.

In Perry County, Reading Township, Ohio Fuel Gas Co. No. 2 L. M. Swinehart, Section 8, made 1,260,000 cu. ft., open flow, from Clinton sand at 3,002-42 feet.

In Stark County, Plain Township, Obermiller Brothers No. 1 Thomas Myers, Section 7, gauged 360,000 cu. ft. from Clinton sand at 4,484-4,501 feet. In Plain Township, White Co. No. 1 M. P. Whitmire, Section 23, had only a small showing of gas in the Clinton sand and was abandoned at 4,657 feet.

Lima Field

Two tests have been carried through the Trenton rock to the Green sand for no production. In Seneca County, Sun Oil Co. No. 2 Mary Crum, Section 7, found the Green sand dry at 2,068-82 feet, with the Blue Lick Water at 2,092 feet. The hole will be carried deeper into the St. Peter formation.

In Hancock County, Washington Township, Travelers Oil Co. No. 1 Jacob McCauley, Section 2, was abandoned at 1,929½ feet; Green sand at 1,919-22½ feet; Blue Lick water at 1,929 feet.

DEFENSE PLAN

(Continued from Page 9)

fleet at sea, and the intention is to continue the present practice of purchasing oil supplies f.o.b. its storage depots, which means delivery by commercial tankers. Four oilers are now operating with the fleet in the Carribean and during these war games will carry a total of 19 ship loads of various types of petroleum products from Houston for delivery to the fleet at sea. Last year the Navy sent one of its oilers to England to refuel the vessels used by the midshipmen from Annapolis on their annual cruise and found that in this way it could supply these vessels with American oil at about half the cost of procuring foreign oil at European ports. However, the Navy will not send its tankers to refuel the three warships scheduled to make a goodwill cruise around South America and these vessels will refuel in South American ports but the oil probably will be purchased through American-owned oil companies operating there.

The impossibility of estimating in advance the Navy's requirements for fuel oil was explained to the House committee on appropriations last year by Commander R. D. Kirkpatrick of the Bureau of Supplies and Accounts. He told the committee:

"If we knew exactly how many miles each and every vessel would cruise at each separate speed throughout the year, then we could give to you an estimate of fuel requirements that would be correct to within about 2 per cent, but obviously it is impossible to even approximate basic data of such accuracy.

"To better explain the problem permit me to point out a few of the major difficulties:

"Our initial type mileages are obtained from the annual Proposed Fleet Employment Plan—a document which sets forth for each type of naval craft the number of weeks of each quarter that will be devoted to ordinary cruising, to gunnery, to tactics, and at anchor. Since each underway task requires a different speed range, with correspondingly different fuel oil consumption, any appreciable change in the proposed plan introduces errors in our estimates for the force or forces concerned.

"We employ certain formulas to determine speeds required for different tasks. While these formulas are reasonably accurate for average conditions, quite frequently the unusual occurs, with the result that the oil calculations for the unit or force concerned are in error.

"The effect of different speeds on oil consumption is enormous. For example, a destroyer steaming at 10 knots can cover a certain distance on 500 bbls. of oil, but that same destroyer will require 880 bbls. of oil to cover the same distance if steaming at 20 knots. Or a certain cruiser requires 1,620 bbls. to cover a given distance at 15 knots, but will require 5,520 bbls. to cover that same distance at 30 knots.

"From this you can see how difficult it is to arrive at an accurate prediction of requirements when varying character of problems, situations, or emergencies may require an entirely unexpected speed.

"On fleet problems, for example, when approximately 120 naval vessels of all classes are engaged in war maneuvers over a wide sea area the distances to be steamed, speeds to be used, and consequent fuel oil consumption present a problem that cannot be solved with accuracy.

"Again, we must be prepared for the unexpected. Each year wholly unanticipated requirements arise which often mean large expenditures of fuel. For example, the dispatch of the Quincy to Spanish duty required 18,718 bbls.; the Oklahoma to Spanish duty, 11,276 bbls.; the New York, to the British coronation ceremonies, 24,452 bbls.; and so forth. In fact, the unexpected requirements for 1936 totaled 108,275 bbls.; for 1937, 172,024 bbls.; and for 1938 has already reached 200,000 bbls.

"Sizeable errors frequently result from changed dates in the commissioning of new construction or from delays which occur in the actual reporting dates of new construction vessels for duty with the operating forces. Since these calculations are made a year or more in advance of actual use of the oil, errors in connection with new construction allowances are inevitable."

The traditions of military secrecy and bureaucratic red tape make it exceedingly difficult to obtain much accurate information on the current and future needs of the Army and Navy for petroleum products, but the best estimate of a number of high officers in both branches of the service is that gasoline and fuel needs will expand considerably during the next few years but that the current rearmament program will bring no large and immediate jump in these requirements.

Reliable estimates place the consumption of petroleum products by the Navy Department during the last two fiscal years at the following figures: Fuel oil, 7,831,000 bbls. in 1937 and 8,236,000 bbls. in 1938; Diesel oil, 242,000 bbls. in 1927 and 235,000 in 1938; aviation gasoline, 9,602,000 gallons in 1937 and 10,475,000 gallons in 1938; motor gasoline, 5,369,000 gallons in 1937 and 5,235,000 gallons in 1938.

Socony Buys Freedom Outlets In Western Pennsylvania

NEW YORK, Jan. 16.—Distributing facilities of Freedom Oil Works Co. in western Pennsylvania have been purchased for an undisclosed consideration by Socony-Vacuum Oil Co. Inc. The Freedom bulk plant at Freedom, Pa., was involved in the transaction as well as 97 direct retail outlets and contracts with several hundred dealers. The refinery at Freedom, Pa., a complete unit with crude capacity of 2,500 bbls. per day was not involved in the deal. Freedom marketing facilities in Ohio were also excluded. Distributing facilities acquired by Socony-Vacuum handle an annual business in the vicinity of 9,000,000 gallons.

Oil Men Use Homing Pigeons From Isolated Test

CALGARY, Alberta.—The Altoba-Canyon No. 1 well, isolated in the Clearwater forest reserve northwest of Calgary, is using homing pigeons to solve the problem of communication. A return trip to location takes two days in favorable weather, but pigeon flight cuts the 185-mile circuitous route to 85 miles and the time to three hours.

Hamilton Merger Approved

HAMILTON, Ontario.—Shareholders of United Fuel Investments, Ltd., have approved reorganization proposals designed to facilitate the merger of the interests of that company and the Dominion Natural Gas Co. in the Hamilton area. The merger has already been approved by shareholders of the Union Gas Co. of Canada, Ltd.

Carbon Black Project

CALGARY, Alberta.—The Premier Carbon Black Co., Toronto, Ontario, has been registered in the Province of Alberta, where it is expected to carry on operations. The company, capitalized at $200,000, will utilize Alberta natural gas in the manufacture of carbon black.

Market Record of Active Oil Stocks

Compiled by Carl H. Pforzheimer & Co., 25 Broad Street, New York City, Member New York Stock Exchange and New York Curb Exchange

New York Stock Exchange

1938 High	1938 Low	Week ending Jan. 14 High	Week ending Jan. 14 Low	Week ending Jan. 14 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1938	Com. sh. earn. 1937	Com. sh. earn. 1936	1937 High	1937 Low	1936 High	1936 Low
78	55	68½	68½	68½	Amerada Corp.	788,675	N.P.	50cQ	10-31-38	$2.00	$3.04	$2.52	114⅞	51½	125½	75
27⅝	17¾	23½	22½	23	Atlantic Refining	2,663,999	$25	25cQ	12-15-38	1.00	3.51	2.59	37	18	35⅛	26⅝
23¾	12⅛	20½	19	19½	Barber Asphalt Co.	390,223	$10	75c	12-16-37	....	1.91	1.14	43⅜	10⅛	38½	21
21⅜	10⅛	18⅝	17¼	17⅝	Barnsdall Oil Co.	2,250,344	$5	25cQ	2-1-39	1.00	0.85	1.01	35¼	10	28¼	14⅛
10¾	7	9⅛	8¾	8⅞	Consolidated Oil Corp.	13,915,167	N.P.	20cQ	2-15-39	.80	1.48	1.18	17⅞	7	17¼	11½
35¾	21¼	29⅝	28	29¼	Continental Oil of Delaware	4,682,583	$5	25cQ	12-20-38	‖1.00	2.98	2.05	49	24	44⅞	28⅛
9¾	5	8⅛	7¼	7¾	Houston Oil (new)	1,098,618	$25	....	10-17-30	....	0.94	—0.03	17⅝	4¾	13⅞	6⅝
22⅝	12¼	16	15⅝	15⅝	Mid-Continent Petroleum	1,857,912	$10	35c	12-1-38	.60	2.86	2.57	35⅜	14	30⅞	17¼
17¾	10⅝	14½	14¼	14½	Mission Corporation	1,382,945	$10	$1	6-29-38	1.00	1.31	0.48	34	15	29⅞	16¾
23	12½	14⅜	13½	14¼	National Supply	1,155,170	$10	$2 pf.‡	12-22-37	....	4.90	2.02	41⅜	17⅝	75½	19⅞
14⅞	8⅞	10	9⅜	9⅜	Ohio Oil Co.	6,563,377	N.P.	20c	12-15-38	.20	1.30	0.70	22⅞	8	18	12⅛
15⅞	10¼	11¾	11⅛	11⅛	Pacific Western Oil	1,000,000	N.P.	50c	12-20-38	.50	1.39	1.58	29¾	11¾	23½	11⅜
9¼	6¼	6⅝	6½	6½	Pan American Pet. & Trans.	4,702,945	$5	$1*	12-21-37	....	1.18	0.52	17⅛	7	20⅝	12¼
44⅝	27¼	42½	40¼	40½	Phillips Petroleum	4,449,052	N.P.	50cQ	12-1-38	‖2.00	5.42	4.02	64	30⅛	52⅝	33⅛
25⅜	15	22⅜	21½	21½	Plymouth Oil Co.	1,029,800	$5	35cQ	12-12-38	1.40	2.85	1.65	29⅞	13	27¾	11⅞
13½	8¼	10½	9⅞	10	Pure Oil Co.	3,285,120	N.P.	25c	12-1-37	....	2.15	1.63	24⅜	8¾	27⅞	16
10¼	5	10	9	10	Richfield Oil Corp.	3,896,638	N.P.	50c	12-21-38	.50	0.35	...	6½	4⅛	..	..
27½	15½	22	20	21¼	Seaboard Oil of Delaware	1,244,383	N.P.	25cQ	12-15-38	1.00	1.97	2.00	54⅛	16	44	30½
18⅜	10	14⅜	13⅝	13⅝	Shell Union Oil	13,070,625	N.P.	35c	12-20-38	.70	1.44	1.57	34⅜	14⅞	28¼	14⅜
34¾	18½	27⅞	24¾	25½	Skelly Oil	1,003,949	$15	50c	12-15-38	1.00	6.07	4.42	60⅝	26½	47⅝	19½
16⅜	10¾	13¼	12⅞	13¼	Socony-Vacuum	31,151,071	$15	25c	9-15-38	.50	1.82	1.38	23¼	13	17½	12½
34⅞	25⅛	28½	27⅝	28	Standard Oil of California	13,014,754	N.P.	35cQ†	12-15-38	1.40	3.17	1.79	50	27⅛	47⅝	35
35½	24¾	29⅛	28¼	28⅝	Standard Oil (Indiana)	15,267,030	$25	25cQ	12-15-38	1.00	3.66	3.09	50	26½	48½	32¾
50⅜	32½	50⅜	50⅜	50⅜	Standard Oil of Kansas	112,837	$10	$2	12-8-38	2.00	6.93	1.91	43	30⅝	31	25
58⅜	39¾	51⅝	49⅝	50½	Standard Oil of New Jersey	26,224,767	$25	50c§	12-15-38	§1.50	5.64	3.73	76	42	70⅜	51⅛
66	45	64¼	62½	62½	Sun Oil	2,316,484	N.P.	25cQ	12-15-38	1.00	3.86	3.25	77½	44½	91	70
4¼	1¾	3¼	3	3	Superior Oil Corp.	1,388,079	$1	....	.....	....	0.32	0.14	7¾	1½	6¾	3
49⅝	32⅝	46⅛	44½	45¾	Texas Corp.	10,875,006	$25	50cQ	1-5-39	2.00	5.02	4.10	65⅛	34¾	55¼	28⅞
5⅞	2⅝	5⅝	5	5¼	Texas Gulf Producing Co.	888,140	N.P.	15c	12-15-38	.15	0.68	0.93	9⅝	2	8⅞	4⅝
12½	7	10	9½	9½	Texas Pacific Coal & Oil	888,140	$10	10c	12-1-38	.40	1.11	0.72	16⅝	5⅜	15¼	7½
15¾	10⅛	13¾	13⅛	13⅜	Tide Water Associated	6,369,175	$10	25cQ	12-1-38	1.00	2.08	1.03	21⅝	13⅛	21¾	14¾
22½	17⅛	19	18½	18½	Union Oil of California	4,666,270	$25	30cQ	11-10-38	1.20	2.58	1.40	28¼	17½	28½	20⅝
23⅝	20	22½	22	22	Union Tank Car Co.	1,200,000	N.P.	30cQ	12-1-38	1.30	1.70	1.76	31½	22	31⅝	22⅝
3⅝	1⅝	3⅝	3⅛	3⅝	Wilcox Oil & Gas	506,522	$5	....	5-10-28	....	0.24	—0.06	6¼	1⅜	5¼	2⅜

*Payable in 3½ per cent notes. †Includes extras. ‡One-tenth share $2 preferred stock. §Also 1½ per cent stock dividend. ‖Also right to subscribe to bonds.

New York Curb Exchange

1938 High	1938 Low	Week ending Jan. 14 High	Week ending Jan. 14 Low	Week ending Jan. 14 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1938	Com. sh. earn. 1937	Com. sh. earn. 1936	1937 High	1937 Low	1936 High	1936 Low
11¾	5	9	8⅝	8⅝	American Republics Corp.	1,308,049	$10	10c	7-11-38	$0.10	$0.27	$0.28	10	6⅝	..	..
10¼	4⅞	6⅜	6¼	6¼	Bridgeport Machine Co.	260,000	N.P.	$1.25	12-30-37	....	1.90	1.26	21⅜	7	21	13¼
39	22½	30⅜	29	30⅜	Buckeye Pipe Line Co.	200,000	$50	50c	12-15-38	2.00	4.02	4.40	51½	36	50	39¾
128	97	128	126	128	Chesebrough Mfg. Co.	120,000	$25	$2Q†	12-19-38	6.50	6.73	7.46	12	95½	124¾	105
11	5⅛	8	7⅛	7⅝	Cities Service (new)	3,714,317	$10	....	6-1-32	....	1.02	0.13	5⅜	1½	7⅜	3
2⅜	⅞	1⅛	1	1	Cosden Petroleum	462,551	$1	....	.....	....	0.19	...	5½	1½	4½	1½
27½	17½	23	22⅜	22⅜	Creole Petroleum	6,975,383	$5	50cSA†	12-15-38	1.00	1.61	1.23	38¾	20¼	39	19⅞
10¼	5½	7	6⅝	6⅝	Darby Petroleum	351,390	$5	25cSA	1-15-39	.50	1.36	1.26	18⅝	6½	18⅛	9
3½	1½	..	..	..	Derby Oil & Refining	263,162	N.P.	....	.....	....	1.34	0.66	8⅜	2¼	6¾	1⅞
31	17⅛	20	20	20	Eureka Pipe Line	50,000	$50	50c	2-1-39	3.00	—0.12	—0.62	47½	24½	47½	38½
46⅞	33	39¼	38	39¼	Gulf Oil Corp.	9,076,202	$25	25cQ	12-15-38	1.00	3.51	2.90	63½	33	59	36
72⅝	56	68	66¾	68	Humble Oil & Refining	8,987,840	N.P.	62½c	12-27-38	3.00	5.22	3.80	87	54⅞	80	57
19½	14⅛	16½	16¼	16¼	Imperial Oil of Canada	26,965,078	N.P.	62½cSA†‡	12-1-38	1.25	0.98	0.95	24¼	14½	24½	19¾
9⅜	6	..	..	..	Indiana Pipe Line	300,000	$10	20c	11-15-38	.50	1.03	1.00	15	5⅞	9¾	5½
31¼	21	26⅞	26	26⅜	International Petroleum	14,324,088	N.P.	$1.25†‡	12-1-38	2.50	...	1.81	39½	23½	39⅝	32⅝
5	2⅛	3¼	2¾	2¾	Kirby Petroleum Co.	500,000	$1	10c	4-15-38	.10	0.17	0.20	8¾	2⅝	5¾	2⅝
25⅛	15⅝	19¾	19	19	Lion Oil Refining	434,820	N.P.	25cQ	12-15-38	1.00	2.17	1.43	34	12½	17¾	7⅝
10⅜	6⅝	9	8¾	8⅞	Lone Star Gas	5,553,747	N.P.	20c	12-22-38	.60	1.14	1.02	14¼	5¼	14¼	9⅞
9⅜	6½	7¼	7	7	Louisiana Land & Exp.	2,977,449	N.P.	5c spl.	12-23-38	.45	0.58	0.64	15¼	6¾	15⅝	9⅞
9¾	6⅜	8¾	8⅜	8¾	Midwest Oil Co.	998,444	$10	50c	12-15-38	1.00	1.14	0.95	14⅝	6¼	..	..
5¾	4½	5	4⅞	5	Mountain Producers	1,593,584	$10	30cSA	12-15-38	.60	0.76	0.62	7⅞	4⅛	8⅝	5
14⅝	11½	13	12½	12¾	National Fuel Gas	3,810,183	N.P.	25cQ	1-16-39	1.00	0.96	1.19	19½	12	23	17⅜
9¼	6½	7⅞	7⅜	7⅞	National Transit	509,000	$12.50	40c	12-15-38	.75	1.19	0.79	12½	7¼	15⅜	9¼
2⅝	1½	1⅝	1⅝	1⅝	New Mexico and Arizona	1,000,000	$1	1c	12-1-37	....	0.02	0.02	5	1⅜	6⅝	1⅝
9¼	6½	4	4	4	New York Transit	100,000	$5	15c	10-15-38	.25	0.49	0.34	5⅝	3⅞	6¼	4¼
6	4	..	..	..	Northern Pipe Line	120,000	$10	15c	12-1-38	.35	0.78	0.66	12⅜	5⅜	9⅜	4⅞
7⅝	3½	7	6½	6½	Pantepec Oil	2,441,142	$1	....	.....	....	...	0.05	9⅝	2⅜	10⅛	3¼
4½	1⅝	2⅛	2⅛	2⅛	Root Petroleum Co.	336,045	$1	25c	2-1-37	....	—0.17	0.45	12⅜	2	19¼	4½
4	2⅛	2⅞	2⅝	2⅝	Ryan Consolidated	296,931	N.P.	....	.....	....	0.46	...	6½	2¼	4⅜	1⅞
5⅝	3¼	..	..	..	Southern Pipe Line	100,000	$10	15cSA	9-1-38	.30	0.85	0.41	7¼	3⅞	7⅞	3¼
39	28¾	33¼	33	33	South Penn Oil	1,000,000	$25	37½cQ	12-24-38	1.75	4.64	3.59	56	35	44	32½
22¼	17	..	..	..	Southwest Penna. Pipe Lines	35,000	$50	50cQ	12-28-38	2.00	0.95	0.97	42	20	60	44
18¾	15	17¾	17⅝	17⅝	Standard Oil of Kentucky	2,604,790	$10	50cQ†	12-15-38	1.25	1.60	1.46	21⅛	14¾	23⅜	17⅛
8¾	5½	6¾	6½	6¾	Standard Oil of Nebraska	166,403	$25	25c	3-29-37	....	—0.58	0.42	13¾	8	14⅝	11
22¾	16¼	21¼	20¾	21	Standard Oil of Ohio	753,740	$25	25c	12-15-38	1.00	3.67	4.77	45	16	40	21¾
3¼	2	2⅜	2⅛	2⅛	Sunray Oil	2,006,176	$1	10c	12-24-37	.05	0.42	0.26	4⅞	2	5	2⅝
5¼	3½	3⅝	3⅝	3⅝	Texon Oil & Land	936,024	$2	15cQ	9-30-38	.60	0.51	0.36	7⅝	2	9¾	5⅝
7⅝	4¼	5⅜	4½	4¾	Transwestern Oil Co.	750,000	$10	....	.....	....	0.48	0.06	13⅞	4⅝	..	..
5¼	2⅝	3	2⅞	2⅞	United Gas Corp.	7,818,959	$1	....	.....	....	0.25	0.20	13⅞	3	10¾	4

†Includes extras. ‡Payable in Canadian funds. §Of which $1 was in preferred stock.

Personal Paragraphs

H. W. LEE, geologist in the West Central Texas district, who worked the geology for the recently opened Akark pool in Jones County, has opened an office as consulting geologist in Abilene, Tex.

ROBERT M. PITCHER, who last year resigned as secretary and assistant treasurer of the British American Oil Producing Co. and devoted his entire time to the production of the book "Practical Accounting for Oil Producers," has joined the faculty of the University of Tulsa Downtown College. He will be in charge of a course in oil production accounting. His book, recently published, will be used as a textbook in the new course, which is to cover all phases of the subject.

J. F. MURRAY, manager of the southern division of the Southern California Gas Co., has retired and has been succeeded by G. W. CARBEE.

J. WHITNEY LEWIS, geologist and director of the Dominican Seaboard Petroleum Co., is spending a few weeks in New York. He arrived from the Dominican Republic early this month.

T. W. JOHNSON, chief engineer for the United Gas Co., Shreveport, La., has been appointed to the program committee for the spring meeting of the American Petroleum Institute's southwestern district which will be held in San Antonio.

R. B. WARREN, JR., president of the Warren & Robinson Drilling Co., Tulsa, has announced that BOB BRADSHAW is now secretary-treasurer and that the name of the organization has been changed to Warren & Bradshaw Drilling Co.

E. B. LYMAN, New York, assistant manager of the public relations department, Standard Oil Co. of New Jersey, will take MARY DOROTHY MURRAY as his bride January 26. The wedding ceremony is to be read at Saint Catherine's Church, Pelham, N. Y.

R. E. H. GAEDKE was chosen president of the Tarrant County Petroleum Retailers Association at a meeting in Fort Worth, Tex. Other officers elected are HAROLD D. LEVY, vice president; CLYDE SLAY, chairman of the board; ROBERT ISHAM, secretary, and A. B. BILEY, treasurer.

TOM BROWNFIELD, manager of the scouting and statistical department of the Carter Oil Co., was reelected general chairman of the standing committee on oil-field nomenclature, Kansas-Oklahoma division, Mid-Continent Oil and Gas Association, at the annual meeting of the committee. Mr. Brownfield was authorized to name the chairman of the four steering committees, two for Kansas and two for Oklahoma. He reappointed VANCE E. ROWE, manager of Petroleum Statistical Guide, Inc., as chairman of the Oklahoma pool names, and PAUL L. LYONS, chief scout of the Standard Oil Co. of Indiana, as chairman of the Oklahoma oil history group, with ANTHONY FOLGER and E. W. POWELL as chairmen of the two Kansas groups.

LELAND K. WHITTIER, director and vice president of M. H. Whittier Co., in charge of the concern's oil properties, and HERMAN PHLEGER, a partner in the law firm of Brobeck, Phleger & Harrison, which represents American Trust Co. and the Matson Line, have been elected members of the board of directors of the Union Oil Co. of California.

RAY S. WEBB and DWIGHT J. WILSON, both of Wichita, Kans., were hosts at a gusher celebration held recently at "Four Corners," in Barton County, Kansas. The occasion was the completion of No. 1 Clawson, a wildcat 2½ miles south of Ellinwood. More than 200 participated in the beef barbecue, including scouts, lease men, drillers, and land owners of the Ellinwood community.

GOVERNOR HUGH WHITE, of Mississippi, accompanied by members of the state Mineral Lease Commission, made a two-day inspection tour of marine oil operations in the coastal section of Louisiana, to determine the effects of submerged drilling on the fishing industry. The body will consider the leasing of 350,000 acres of Mississippi Sound water for oil development. The other members of the party included GREEK L. RICE, attorney general; W. C. MOGSE, state geologist; GUY McCULLEN, state land commissioner, and H. M. MORSE, state oil and gas supervisor.

Do You Remember?

From The Oil and Gas Journal Files

25 YEARS AGO

James P. Flanagan has resigned as secretary of the Bovaird Supply Co. and will give sole attention to his oil-producing interests in the Mid-Continent field.

The Healdton pool has developed into one of the most important of Oklahoma's oil fields. It was opened in 1913. The oil is of rather low gravity and is good chiefly for fuel.

J. L. Seyfang, 68, one of the founders of Bovaird & Seyfang, oil country manufacturers, dies in Bradford, Pa.

20 YEARS AGO

E. P. Fisher, of the Empire Gas & Fuel Co., Bartlesville, Okla., has been promoted from head of the Empire's natural gas division to a membership on the managing committee of the Empire companies. The two other members are H. R. Straight and R. C. Russem.

The Magnolia Petroleum Co. announces the purchase of a lot at Akard and Commerce streets in Dallas, on which it will build a 10-story office building. The Magnolia moved to Dallas from Corsicana two years ago. John Sealy, of Galveston, is president of the company.

10 YEARS AGO

Robert L. Welch, former secretary and counsel for the American Petroleum Institute, dies in Phoenix, Ariz., where he had gone in search of health.

Michigan's most important new oil development is taking place near Mount Pleasant in Midland County. It was opened by Pure Oil Co. shortly after the beginning of the Muskegon field, but until recently has been held in reserve.

Breckenridge Stephens Walker, multimillionaire producer and oil-land owner in the Central Texas fields, dies in Fort Worth, Tex.

Frank von Tacky, veteran oil refiner, dies in Titusville, Pa.

JOHN R. SUMAN, vice president of Humble Oil & Refining Co., Houston, Tex., was guest speaker at the Dallas Petroleum Club's annual membership meeting last week.

JAY ENGLISH, storekeeper in Wilmington Calif., several years for the Shell Oil Co., has been appointed manager of purchasing and stores for the Los Angeles and southern California divisions.

WARREN SMITH, resident manager of the Pantepec Oil Co. of Venezuela, Caracas, returned to South America last week after spending the holiday season in New York. He was accompanied by Mrs. Smith.

JOHN WALKE, petroleum engineer, has been named supervisor for the Texas Railroad Commission in the Marshall, Tex., office where he will be in charge of regulations in the Marion and Cass County sections of the Rodessa field.

R. F. BAKER, of New York, manager of the Texas Co.'s foreign geological department, and assistant to R. OGARRIO, vice president in charge of production, has arrived in Egypt where he will spend several months in connection with the company's investigation of productive possibilities there.

P. R. APPLEGATE has been made president of the Indiana Pipe Line Co., Buckeye Pipe Line Co., Northern Pipe Line Co., and New York Transit Co., known as the Northern Group of pipe lines. He succeeds D. S. BUSHNELL, who retired at the end of 1938. Mr. Bushnell retains his identity with the group in an advisory capacity.

WALDO SHELDON, manager of the Socony-Vacuum Oil Co., Inc., in Venezuela, sailed from New York January 13, returning to South America.

J. EARLE BROWN, consulting geologist, has been elected president of the Fort Worth, Tex., Geological Society. J. H. MARKEY is vice president and VERNON LIPSCOMB secretary-treasurer.

EDWARD T. KNUDSEN, in charge of the California office of the Bureau of Mines, Petroleum Economics Division, will transfer his office from San Francisco to the recently completed Federal Building in Los Angeles.

DR. C. C. ALBRITTON, professor of geology at Southern Methodist University, Dallas, Tex., was guest speaker at the Dallas Petroleum Geologists' meeting January 16. His subject was the geology of the Malone Mountains.

HARRY C. HANZEN, independent operator and producer of Houston, who represents Houston on the national board of directors of Community Chests and Councils, left last week for New York to attend a board meeting of the organization.

CLAIRE WINDSOR, Hollywood actress, in Boston last week to testify before a federal grand jury in connection with an SEC inquiry into oil dealings which involved reported losses of about $125,000 to investors, said she made a profit on oil stocks. "I bought six units of oil stock for $16,800," Miss Windsor, a government witness, told newspapermen, "and when I was informed that the stock didn't look good I sold it for $500 more than I paid for it."

Just a Diploma Anyway

When Edgar G. Hill, new president of the National Refining Co., Cleveland, Ohio, graduated from Yale as a mechanical engineer in 1904 he wasted no time admiring his diploma, but promptly went to work as a machinist's apprentice in the old Snow Steam Pump Works, Buffalo, N. Y. He worked up through the shop and engineering departments to the position of assistant chief engineer. Later he became sales engineer, staying in that field till 1918, when he was made chief engineer of the Southwestern Gas Co., Independence, Kans. In 1920 he was employed by Ford, Bacon & Davis, of New York, in the evaluation of a large natural gas system. He remained with that organization, becoming a vice president in 1927 and a director in 1930.

EDGAR G. HILL

During 1923 and 1924 Mr. Hill built and operated the natural gas system serving Edmonton, Alberta, Canada. After that, up to 1930, he built and operated several of the largest natural gas systems in the United States, including those of the Interstate Natural Gas Co., which supplies New Orleans; Colorado Interstate Gas Co., which extends from the Texas Panhandle to Denver; and the Southern Natural Gas Co., supplying the Birmingham, Ala., area and Atlanta. He handled construction contracts in building natural gas systems for St. Louis, Mo., and Memphis, Tenn. With Mrs. Hill and their four children, he resides in Larchmont, N. Y.

DR. J. O. G. SANDERSON, of Calgary, Alberta, geologist for the Home Oil Co., has been elected a fellow of the Geological Society of America.

G. C. CLARK, geologist for Stanolind Oil & Gas Co., has been transferred from the company's Wichita Falls, Tex., office to the Fort Worth office. He will scout the North Central Texas district.

H. HARRISON SMITH was reelected president of the International Petroleum Co., Sarnia, Ontario, at the annual meeting. R. V. LeSUEUR was reelected vice president and J. R. CLARKE secretary-treasurer.

W. K. WARREN, president, and J. A. La FORTUNE, vice president of the Corpus Christi Corp., went to the Nueces, Tex., area last week to inspect the company's new pressure maintenance plant, which was put in operation last month.

HARRY E. ZOLLER, Wichita, division manager for Kansas for the Shell Petroleum Corp., was named chairman of an executive committee organized last week by operators in the South Trapp pool in Barton County, Kansas, to formulate production regulations.

JOHN BEVEL, scout in the central and western Kansas districts for the Gulf Oil Corp. the past eight years, left last week for Indianapolis, Ind., assigned to a new post in the Illinois-Indiana - Ohio - Kentucky district. GILBERT FITZGERALD, Gulf scout in the Kansas district, has also been transferred to the Illinois Basin area. C. P. FOWLER, seismograph scout in Kansas for the Gulf, will succeed Mr. Bevel, and JACK SALLEE, from the Tulsa office, will take Mr. Fowler's place.

SHIFTS: CHARLES C. LOWERY, vice president, Nylatex Petroleum Corp., from Shreveport, La., to Shoreline, La.; J. R. WILLIAMS, geologist, J. V. Wicklund Development Co., from Urbana, Ill., to Owensboro, Ky.; J. F. DARBY, president, Darby Linde Co., from Muskogee, Okla., to Chandler, Ariz.; CHARLES S. SKINNER, Phillips Petroleum Co., from Midland, Tex., to Odessa, Tex.; D. L. GARRISON, engineer, Pan American Petroleum Co., from Jeanerette, La., to Bay City, Tex.; C. MAYNARD BOOS, Independent Exploration Co., from Mattoon, Ill., to Denver, Colo.; H. H. LAWSON, producer, from Bloomington, Ind., to Dallas, Tex.; GEORGE WITTMER, III, engineer, Wittmer Oil & Gas Properties, from Pittsburgh, Pa., to Abilene, Tex.; ALFRED H. McADOO, producer, from Hobbs, N. M., to Alhambra, Calif.; J. C. HEGGBLOM, Western Gulf Oil Co., from Fresno, Calif., to Bakersfield, Calif.; MAX B. EDERINGTON, engineer, Oklahoma Pipe Line Co., from Wewoka, Okla., to St. Elmo, Ill.; HARRIS COX, N. V. Nederlandsche Pacific Petroleum Mij., from Batavia, Java, D.E.I., to Babo, New Guinea; C. T. HEGWER, driller, E. F. Stella Co., from Pomona, Calif., to Orlando, Calif.; C. F. NICKLOS, superintendent, the Texas Co., from Hamilton, Colo., to Craig, Colo.; C. J. JONES, producer, from McAllen, Tex., to Laredo, Tex.; J. D. TOMPKINS, Acme Oil & Royalty Co., from Midland, Tex., to Houston, Tex.; C. H. BRANDENBURG, producer, from Olney, Tex., to Atoka, Okla.; JOHN R. CRANDALL, Humble Oil & Refining Co., from Freer, Tex., to Luling, Tex.; E. M. GOULD, drilling contractor, from Centralia, Ill., to Vandalia, Ill.; R. C. OSTERSTROM, Pure Oil Co., from Chicago, to Toledo, Ohio; JOHN SHOEMAKE, producer, from Owensboro, Ky., to Wichita, Kans.; C. A. BENSON, engineer, Phillips Petroleum Co., from Madison, Kans., to El Dorado, Ark.; HARRY O. REA, superintendent, Oneida Oil Co., from Cody, Wyo., to Lomita, Calif.; W. E. SODEN, Sun Oil Co., from Marcus Hook, Pa., to Philadelphia, Pa.

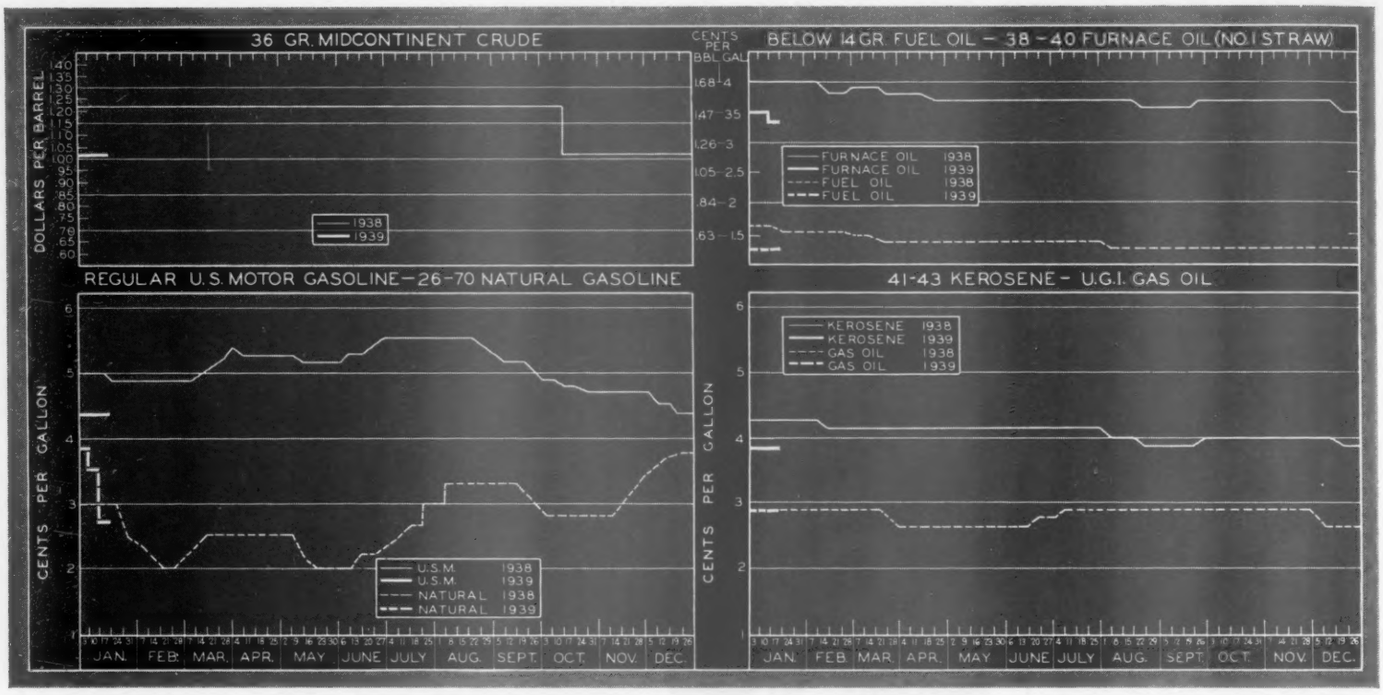
A. W. WYATT, scout for the Atlantic Refining Co. at Midland, was reelected president of the West Texas Oil Scouts Association. CHARLES L. SHERWOOD, scout for the Tide Water Associated Oil Co., was named secretary-treasurer, succeeding A. S. DONNELLY, geologist for Honolulu Oil Corp., Ltd.

C. A. YOUNG, division secretary of the American Petroleum Institute, was named president of the Dallas Petroleum Club. He succeeds R. S. McFARLAND, Seaboard Oil Co. J. B. COWDEN, of the Clark & Cowden Drilling Co., was named vice president, and FRANK I. BRINEGAR, of Continental Supply Co., was renamed secretary-treasurer.

M. C. HARRELL, production superintendent for the Kansas division of the Texas Co., and residing in Wichita, recently attended the fifty-sixth wedding anniversary of his parents, Mr. and Mrs. G. M. Harrell, in Shattuck, Ellis County, Oklahoma. The occasion was celebrated by 33 members of the family gathered from Kansas, Oklahoma and Missouri.

JOHN G. BARTRAM has been named division geologist for the Stanolind Oil & Gas Co., his territory embracing Oklahoma, Kansas, Arkansas and northern Louisiana. He was formerly division geologist in Casper, Wyo. He will reside in Tulsa. Mr. Bartram went to work for the old Midwest Refining Co. in 1923, and spent 15 years in the Rocky Mountain district for the Midwest and the Stanolind.

DR. FREDERICK G. CLAPP, speaking before the Geological Society of America, meeting in New York, declared oil men must demonstrate that they can meet their own problems if the petroleum industry is to remain free from government control. With continuance of the technological progress which has marked recent years, no serious oil shortage was seen by Doctor Clapp, unless it should develop out of some emergency such as a great war.



Representative Mid-Continent Quotations on Crude Oil and Refined Products, Basis Oklahoma (Group 3)

Naturals Take Swift Dive in Group 3 Market; Heating Oils in Trouble

By T. F. SMILEY

Without the benefit of parachute, Oklahoma and Texas natural gasoline shot headlong toward the bottom of the price graph in the past week. Its sharp descent was the most conspicuous development in the Group 3 market. Heating oils, under the pressure of swollen inventories, lost an eighth-cent. Gasoline quotations were holding, but this division was in need of a friendly hand.

Lose Quarter-Cent Daily

The naturals lost a quarter-cent in each of three successive days. Whether they had finished their plunge was a matter of conjecture. Both refiners and jobbers wanted to know. The swift drop was ascribed to lack of immediate demand. The January decline is a common enough phenomenon in the natural gasoline trade, but rarely is there such a precipitate tumble as that witnessed this year. The seasonal weakness derives from the inability of refiners to determine far in advance just when they should switch from winter-specification motor fuel to spring-specification. Cautious buying—oftentimes for day-to-day needs only—prevails for a time. So many purchasers were in this hesitant frame of mind simultaneously this year that inventories of small manufacturers got out of hand and prices broke.

Although nobody was making confident predictions, there was a general feeling that natural gasoline prices probably had touched their lows. As soon as refiners and jobbers are fairly sure the market is leveling out, generous buying is expected. It often has happened in the past that buyers, trying to catch the market at its lowest point, waited too long and were forced to stock up on rising quotations. It is not believed the naturals will repeat this year their performance of 1938, when the 26-70 grade fell to 2 cents.

Heating oils, which had managed to hold their prices pretty well through a long period of unseasonably warm weather, crumpled a little in the past week. Refiners without adequate storage facilities, finding no outlet for their mounting inventories, offered concessions to move them. Eventually the whole market was affected. Many believe that a fairly protracted spell of cold weather will put furnace oils in a satisfactory position.

Refined Oil Market Barometer

Light fuels stronger in the East, but lagging in the interior areas. Stocks on both Atlantic and Gulf coasts in satisfactory condition. Kerosene soft, in sympathy with furnace distillates. Natural gasoline, after an almost perpendicular drop, shows tendency to level off. Gasoline in the higher-octane ratings increasingly steady. Heavy industrial oils firmer.

MID-CONTINENT. Natural gasoline sharply off. Motor fuel steady. Heating oils off.

EAST COAST. Light fuels up. Industrial oils steady. Gasoline holding.

GULF COAST. Fuel oils off. Kerosene and gasoline weak.

PENNSYLVANIA. Heavy fuel oil tightening. Lubricating oils steady. Gasoline weak.

CALIFORNIA. Natural gasoline easy. Firmer general market expected.

CHICAGO. Gasoline irregular. Heating oils soft. Position of heavy fuels improving.

Reports indicate that the new 67-octane third-grade gasoline has become established throughout Standard Oil Co. of Indiana territory, with prospects of its adoption in other regions. Furthermore, there is a growing feeling that the worry manifested when this newcomer in the motor fuel family first appeared was ill founded. An opinion commonly heard now is that it will function as a market stabilizer. For one thing, it has a definite octane specification. The old third grade, which it supplants, was something to guess about.

Getting More for 67-Octane

Fulfilling forecasts, the 67-octane gasoline is already commanding higher retail prices in metropolitan areas than its predecessor. Some service stations are getting 1 to 1½ cents more. In agricultural regions, where a larger proportion of old-type cars are in use, the progress of the new fuel is not so marked. In these regions, too, the lowest low-octane fuel is used for light and heat, purposes for which the 67-octane product is not adapted. Some refiners now are blending regular-grade gasoline with the old low-octane material to make a 67-octane motor fuel for distribution in competitive territory.

No clear change was observable in the lubricant group, but faint signs of improvement were seen in both neutrals and bright stocks, particularly the former. Refiners who steadfastly have refused to take any part in the price-cutting, which eventually demoralized the market, say movement at their higher level of quotations is freer, indicating some diminution of distress inventories. Wax was maintaining its strength, with the market oversold. Heavy industrial fuel showed no change.

Wintry Blast on Eastern Coast Boosts Demand for Oil Fuel

By H. STANLEY NORMAN

NEW YORK, Jan. 17.—Domestic demand for light fuel oils snapped back to severe winter proportions as the past week ended, terminating a lull created by nearly two weeks of comparatively mild temperatures. A cold wave swept over the eastern seacoast accompanied by snow and tumbled temperatures below the freezing level on a 24-hour per day range. Consumers ordered out supplies immediately ending a period of two weeks to a month during which deliveries had been seriously curtailed.

During the period of inactivity light fuel oil tank-wagon prices had been subjected to local pressure throughout the north Atlantic coast district, although the general quotations had not been revised. Tank-wagon deliveries of No. 2 fuel could be obtained in some directions for as little as 5½ cents per gallon during the period of mild temperatures. However, tankcar prices remain unchanged at the higher levels to which they were raised January 4. Practically all tankcar suppliers are asking 4¼ cents per gallon for No. 2 fuel oil and several are asking the same figure for No. 4 material although the latter grades are available in some directions at 4 cents per gallon to the barge trade and an eighth of a cent higher for tankcar deliveries. Indications are that a majority of No. 2 fuel oil consumers are paying 6½ to 7½ cents per gallon for tank-wagon deliveries. However, areas in which the higher of the two previous figures exists are remotely located from distributing centers.

Demand for industrial fuels which was unaffected by the temperature fluctuations earlier in the month is reported holding to approximately the levels established in November and December. Reports from the Gulf Coast indicate that pressure has diminished somewhat on the buying side of the Bunker C fuel oil market. but no refiners are currently quoting less than 67½ cents per barrel to the cargo trade.

Bunker fuel oil, Grade C, is firmly quoted at 95 cents per barrel in New York, Philadelphia and other neighboring ports on the Atlantic. Predictions continue to circulate in the trade that a general price advance will develop within a few weeks in the industrial fuel oil market including Bunker C material. Suppliers continue to make shore plant deliveries of No. 6 fuel oil at a range of 2.65 to 3.95 cents per gallon. Material offered at the low of the range is limited in quantity and in some instances has inferior specifications for certain types of service.

While the mild temperatures existing during the first two weeks of January had a detrimental effect on demand for No. 2 and No. 4 fuel oils they appeared to stimulate the call for kerosene in several sections. This apparent anomaly is explained by the fact that several central heating plant operators turn to space heaters during periods of mild weather, particularly in the southern part of New England. Providence, R. I., was the outstanding strong point in the past week's tankcar kerosene market. Prices appeared reasonably well established at 4¾ to 5 cents per gallon and tank-wagon quotations were pegged at 7 to 7½ cents, according to reports.

Kerosene was firm and unchanged in the New York tankcar and tank-wagon markets. Suppliers reported that shipping instructions were being received at a normal rate and that demand appears to be well in balance with available material.

Gulf Coast refiners are resisting efforts to drive the gasoline market into lower ground. Quotations are reported reasonably firm at a level of 4⅜ cents per gallon for 60-octane motor fuel and at 4⅝ cents for 65-octane 375-endpoint gasoline. Coastwise movement of motor fuel has followed rather routine lines since the turn of the year, but this is in keeping with normal expectations and is causing no uneasiness on the part of suppliers in the primary markets. Two inquiries for export cargoes of motor fuel remain in the hands of Gulf Coast refiners, but there is considerable disparity between the ideas of buyers and sellers indicating that distress is the exception at the moment.

A retail price war developed late last week in Boston. At the end of the week most of the dealers had joined in the march to lower ground for third-grade motor fuel. Numerous Boston stations were offering third-grade motor fuel at 11½ cents per gallon, including 4 cents taxes. The regular and premium grades had not been disturbed when last reports were received, but the general market probably could not withstand such a wide spread between the various grades over a long period. There had been no revision in the tankcar and tank-wagon quotations, although dealers were being protected for at least a part of the constricted margins.

In New York the motor fuel market was generally unchanged from the preceding week. Tankcar purchasers are being quoted from 5¾ to 6 cents per gallon for 65-octane gasoline. Movement into consuming channels has resumed the rate normally expected during the winter season after a temporary flurry during the Christmas and New Year holiday season. The retail structure appears to be in reasonably sound condition at the present. Agitation is continuing in some of the western and northern New York marketing centers for application of Feld-Crawford fair trade act contracts between the supplying companies and the service station dealer-operators.

Since the start of 1939 demand for tankers has been slow in both the coastwise and off-shore trade. A tanker was fixed during the past week for movement of light crude oil late this month from the Gulf to north of Hatteras at 21 cents per barrel. This rate of 21 cents is off 4 cents per barrel from the last previously reported fixture and the trend may play a part in delaying the predicted advance in industrial fuel oil prices along the north Atlantic coast. The chartering activity in the off-shore tanker market was moderately active, but prices were discouraging and failed to meet quotations of the boat owners by several points.

As in other refining areas, heavy fuel oil was the outstanding feature in western Pennsylvania. Most refiners in that section reported they were well sold up on industrial grades of fuel. Part of the current activity in Pennsylvania fuel stocks is for the account of cracking plants. Most of the current business is transacted on a range of prices of 3⅞ to 4 cents per gallon. The lubricating oils were unchanged in Pennsylvania. Suppliers reported satisfactory demand from contract customers and export requirements were following routine lines. The market on all grades of lubricating stock was unchanged from the preceding week.

Concentrated programs are being launched in northern Pennsylvania and in western and northern New York to terminate the almost incessant price wars in the retail market of motor fuel. Meetings have been held during the past few weeks at Philadelphia, Pittsburgh, Chambersburg, Rochester, Syracuse and Utica. The cities selected for the dealer meeting are fairly represent-

(Continued on Next Page)

A. P. I. Weekly Refinery Statistics

Week Ending January 14, 1939

	Capacity reporting (per cent)	Daily crude runs (bbls.)	Total gasoline stocks	Gas oil and fuel oil stocks
East Coast	100.0	462,000	17,789,000	12,225,000
Appalachian	85.9	99,000	3,116,000	787,000
Indiana, Illinois, and Kentucky	89.5	423,000	11,783,000	7,107,000
Oklahoma, Kansas, and Missouri	81.6	245,000	6,560,000	4,359,000
Inland Texas	50.3	117,000	1,644,000	1,975,000
Texas Gulf	89.5	846,000	9,964,000	10,604,000
Louisiana Gulf	97.3	123,000	2,233,000	2,040,000
North Louisiana and Arkansas	55.0	41,000	468,000	876,000
Rocky Mountains	54.2	40,000	1,387,000	694,000
California	90.0	509,000	14,188,000	98,463,000
Total reported	85.8	2,905,000	69,132,000	139,130,000
Estimated unreported	.....	355,000	4,620,000	3,330,000
*Estimated total	.....	3,260,000	73,752,000	142,460,000
*Estimated total previous week	.....	3,170,000	72,818,000	143,333,000
*January 15, 1937	.....	3,240,000	80,947,000	118,962,000

*Bureau of Mines, currently estimated.

Stocks of Crude Oil in the United States

(BUREAU OF MINES ESTIMATES)

Week ending January 7, 1939	272,325,000 barrels
Week ending December 31, 1938	273,024,000 barrels
Week ending January 8, 1938	303,078,000 barrels

Figures do not include stocks of heavy, unrefinable California crude.

Retail Oil Markets

Tank-wagon and filling station prices on gasoline and kerosene furnished by the larger marketing firms

Prices as of January 17, 1939

Taxes

The gasoline quotations given in the following tables include the 1-cent federal tax, as well as state, county, and city taxes. The gasoline is the regular or standard grade. In most areas lower grades and a premium grade also are available.

Standard Oil Co. (Indiana)

	Gasoline Tank wag.	Gasoline Dlr.	Inc. tax	Kero. tank-wag.
Chicago, Ill.	15.1	12.1	4.0	10.0
Decatur	15.1	12.6	4.0	10.0
Joliet	15.1	12.6	4.0	10.0
Peoria	15.1	13.1	4.0	10.0
Quincy	14.9	12.9	4.0	8.7
Davenport, Ia.	15.1	13.6	4.0	‡10.0
Des Moines	14.9	13.4	4.0	‡9.8
Mason City	15.3	13.8	4.0	‡10.2
Duluth, Minn.	16.9	15.4	5.0	10.8
Mankato	16.5	15.0	5.0	10.4
Minneapolis	16.0	14.5	5.0	10.4
LaCrosse, Wis.	16.5	15.0	5.0	10.4
Green Bay	16.9	15.0	5.0	10.3
Milwaukee	16.3	14.8	5.0	10.2
Detroit, Mich.	13.1	11.6	4.0	9.0
Grand Rapids	14.8	13.05	4.0	9.7
Saginaw	15.8	14.3	4.0	9.3
Evansville, Ind.	16.6	15.1	5.0	†10.5
Indianapolis	16.8	15.3	5.0	†9.5
South Bend	17.1	15.6	5.0	†9.0
Fargo, N. Dak.	16.7	15.2	4.0	11.6
Minot	18.0	16.5	4.0	12.9
Huron, S. Dak.	17.0	15.5	5.0	10.9
Kans. City, Mo.*	14.4	11.9	4.0	7.5
St. Louis*	14.7	13.2	4.0	8.0
St. Joseph	14.4	11.2	4.0	9.3
Wichita, Kans.	13.9	10.6	4.0	7.3

*State tax 2 cents, 1-cent city tax and 1-cent federal tax. †Does not include 4-cent state tax. ‡Does not include 3-cent state tax.

Exclusive of state general sales taxes.

Discounts to commercial consumers: On purchases per month off tank-wagon prices: 1,000 gallons or more, 1.5 cents off; minimum delivery 25 gallons.

Stanolex Fuel Oil in Chicago

Effective November 1, 1938, f.o.b. Chicago tank-wagon prices: Standard range oil, 1-99 gallons, 9 cents; 100-149 gallons, 8 cents, 150 gallons and over, 7.5 cents. Stanolex fuel oil No. 1, 1-149 gallons, 8 cents; 150-399 gallons, 7 cents; 400 gallons and over, 6.5 cents. Stanolex furnace oil, 1-149 gallons, 8 cents; 150-399 gallons, 7 cents; 400 gallons and over, 6.5 cents. Stanolex grade A, 1-399 gallons, 4.75 cents; 400 gallons and over 3.75 cents. Stanolex grade B, 1-799 gallons, 4.75 cents; 800 gallons and over, 3.75 cents.

Atlantic Coast District

STANDARD OIL CO. OF NEW JERSEY

	Gasoline Tank-wag. dlr.	Gasoline Tank-car con'r.	Inc. tax	Kero. tank-wag.
Atl'tic City, N. J.	12.7	10.9	4.0	8.0
Newark	12.7	10.9	4.0	8.0
Annapolis, Md.	14.35	12.85	5.0	9.5
Baltimore	13.75	12.25	5.0	8.5
Cumberland	16.15	13.65	5.0	10.0
Wash'g'n, D. C.	12.0	10.50	3.0	9.5
Danville, Va.	16.95	14.45	6.0	12.9
Norfolk	15.75	13.25	6.0	11.5
Petersburg	16.05	13.55	6.0	11.7
Richmond	16.05	13.55	6.0	11.7
Roanoke	17.25	14.75	6.0	11.0
Charles'n, W. V.	16.55	14.05	6.0	12.6
Parkersburg	14.85	13.35	6.0	11.2
Wheeling	15.75	14.35	6.0	12.2
Charlotte, N. C.	18.15	15.65	7.0	12.1
Hickory	18.65	16.15	7.0	12.5
Mt. Airy	18.45	15.95	7.0	12.3
Raleigh	17.75	15.25	7.0	11.6
Salisbury	18.25	15.75	7.0	12.2
Charleston, S. C.	16.75	14.25	7.0	10.6
Columbia	17.25	15.25	7.0	11.6
Spartanburg	18.45	15.95	7.0	12.4

Price basis to commercial consumers, effective March 8, 1937, in Maryland, District of Columbia, and in Arlington and Fairfax counties in Virginia; and March 12 in New Jersey: To contract accounts purchasing at least one full compartment at time by hose connection, on yearly purchases: From 2,500 to 100,000 gallons, consumer tank-wagon price at time and place of delivery; 100,000 gallons per year, consumer tankcar price plus .5 cent per gallon. Consumer tank-wagon price generally will be equivalent to dealer tank-wagon price less .5 cent per gallon.

Effective December 19, 1938, the following policy for the sale of motor fuel by tank-wagon to commercial consumers in North Carolina was instituted: Single deliveries of 50 to 149 gallons, inclusive, 1 cent over posted consumer tankcar price; single deliveries of 150 gallons and over, .5 cent over posted consumer tankcar price; deliveries of less than 50 gallons, 6 cents above posted consumer tankcar price.

Effective December 16, 1938, the following policy for the sale of motor fuel by tank-wagon to commercial consumers in South Carolina was instituted: Single deliveries of 25 gallons to 149 gallons, inclusive, 1 cent over posted consumer tankcar price; single deliveries of 150 gallons and over, .5 cent over posted consumer tankcar price; deliveries of less than 25 gallons at one time, 6 cents above posted consumer tankcar price.

Discount for kerosene, 1 cent off tank-wagon price for 25 gallons or more under contract (contract not necessary in Baltimore) except no discount in New Jersey.

Southern District

STANDARD OIL CO. (KENTUCKY)

	Gasoline Tank-wag.	Gasoline Net con'r	Gasoline dlr.	Inc. tax	Kero. tank-wag.
Atlanta	20.5	17.5	7.0	8.5
Augusta	19.5	16.5	7.0	10.0
Macon	18.0	15.0	7.0	11.0
Savannah	19.0	16.0	7.0	8.0
Birm'ham, Ala.	21.0	18.0	8.0	8.5
Mobile	21.0	18.0	9.0	8.5
Montgomery	21.0	19.0	9.0	10.5
Jackson, Miss.	17.5	14.5	7.0	9.5
Vicksburg	19.0	16.0	7.0	9.0
Jacksonville, Fla.	20.0	17.0	8.0	8.0
Miami	20.0	17.0	8.0	8.0
Pensacola	21.0	18.0	9.0	8.0
Tampa	20.0	17.0	8.0	8.0
Lexington, Ky.	19.0	16.0	6.0	10.0
Covington	17.5	14.5	6.0	9.5
Louisville	17.5	14.5	6.0	9.0
Paducah	18.5	15.5	6.0	9.0

Price basis to tank-wagon consumers: Effective January 4, 1937; 3 cents per gallon below tank-wagon price. Effective June 4, 1938, 2 cents per gallon discount eliminated from all kerosene markets in Mississippi, Alabama, Georgia, and Florida, markets being reduced correspondingly to a net basis.

Montgomery, Ala., has a county tax of 1 cent per gallon, and a city tax of 1 cent per gallon on gasoline, in addition to state tax and 1 cent per gallon on kerosene. Mobile, Ala., has a city gasoline tax of 2 cents per gallon; Birmingham, Ala., has a city gasoline tax of 1 cent per gallon; Pensacola, Fla., has a city gasoline tax of 1 cent.

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline Dealer	Inc. tax	Kero-tank-wag.
Denver, Colo.	15.5	5.0	11.5
Grand Junction	16.0	5.0	15.0
Pueblo	14.5	5.0	10.5
Casper, Wyo.	17.0	5.0	11.5
Cheyenne	13.0	5.0	13.0
Billings, Mont.	18.0	6.0	13.0
Butte	19.5	6.0	15.5
Great Falls	18.0	6.0	15.5
Helena	20.0	6.0	15.5
Salt Lake City, Utah	16.0	5.0	16.0
Boise, Idaho	19.0	6.0	18.0
Twin Falls	19.5	6.0	18.0
Albuquerque, N. M.	16.0	*6.5	10.0

*Includes city tax of .5 cent.

Ohio

STANDARD OIL CO. OF OHIO

	Gasoline Tank-wag. con'r.	Gasoline Di-vided dlr.	Inc. tax	Kero-wag. tank-
Ohio points	16.0	15.0	5.0	*13.0

*Includes state tax of 1 cent.

Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA

	Gasoline Tank-wag.	Gasoline Serv. sta.	Inc. tax.	Kero. tank-wag.
San Francisco	17.5	18.5	4.0	11.5
Los Angeles	17.0	18.0	4.0	10.0
Fresno, Calif.	18.5	19.5	4.0	12.5
Phoenix, Ariz.	21.5	22.5	6.0	*17.5
Reno, Nev.	20.5	21.5	5.0	13.5
Portland, Ore.	20.0	21.0	6.0	13.5
Seattle, Wash.	20.0	21.0	6.0	13.5
Spokane	23.0	24.0	6.0	16.5
Tacoma	20.0	21.0	6.0	13.5

*Includes 5-cent state tax.

Discounts to dealers: On gasoline, off tank-wagon price, to 100 per cent dealers, 3 cents; to split dealers, 2 cents. To commercial consumers: On tank-wagon price; on single deliveries of 40 gallons and over, advance quantity discount extended at time of delivery, 3 cents. Service station schedule applies on single deliveries less than 40 gallons. On kerosene in tankcar, transport truck and trailer delivery, 3 cents off tank-wagon price; plant deliveries to jobbers, 2.5 cents below tank-wagon.

New York and New England

SOCONY-VACUUM OIL CO., INC.

	Gasoline T'wag. dealer	Gasoline T'car consr.	Inc. tax	Kero. tank wag.
Albany	13.8	11.75	5.0	8.0
*Met. N. Y.:				
Manhat., Bronx	12.9	11.75	5.0	8.0
Staten Island	12.9	11.75	5.0	8.0
Q'ns & Bklyn.	12.9	11.75	5.0	8.0
Buffalo	12.5	12.0	5.0	7.5
Rochester	13.5	12.7	5.0	8.5
Syracuse	13.5	12.4	5.0	8.5
Boston, Mass.	12.5	10.5	4.0	7.5
Portland, Me.	14.0	11.75	5.0	8.75
Manch'ter, N. H.	14.5	12.3	5.0	8.5
Burlington, Vt.	14.7	12.3	5.0	9.0
Springf'd., Mass.	13.0	11.0	4.0	7.5
Worcester	13.0	11.0	4.0	8.0
Hartford, Conn.	12.9	10.9	4.0	6.5
New Haven	12.3	10.8	4.0	7.0
Providence, R. I.	12.5	10.5	4.0	7.5

*Does not include 2 per cent city sales tax which is calculated on basis of net retail price exclusive of state and federal taxes. Metropolitan New York prices are undivided dealer prices; others are split dealer.

Price basis to undivided dealer: Posted dealer tank-wagon price less .5 cent. Price basis to commercial consumer: Effective Nov. 15, 1936, monthly purchases of 25,000 gallons and over, consumer tankcar prices at delivery point plus .5 cent per gallon; monthly purchases of 5,000 to 25,000 gallons, undivided dealer price at delivery point; monthly purchases under 5,000 gallons, pay divided dealer tank-wagon prices at delivery point.

Pennsylvania, Delaware, and Part of New England

ATLANTIC REFINING CO.

	Gasoline Tank-wag. dlr.	Gasoline Tank-car con'r.	Inc. tax	Kero. tank-wag.
Phil'delphia, Pa.	13.0	12.0	5.0	10.0
Pittsburgh	15.0	13.0	5.0	10.5
Allentown	14.25	12.75	5.0	10.5
Erie	14.5	13.0	5.0	10.0
Scranton	14.5	13.0	5.0	10.5
Altoona	15.0	13.0	5.0	10.5
Dover, Del.	13.5	...	5.0	10.5
Wilmington	12.5	...	5.0	9.75

Price basis to undivided dealers, dealer tank-wagon price less .5 cent per gallon. Price basis to commercial consumers in Pennsylvania and Delaware, effective March 11, 1937: Consumers under contract using 100,000 gallons or more per year full compartment hose deliveries, tankcar plus .5 cent. Consumers under contract using less than 100,000 gallons per year compartment hose deliveries, undivided dealer price. Consumers under contract less than full compartment delivery, consumers not under contract, less than full compartment delivery, and consumers not under contract full compartment delivery, divided dealer price. Less than 25 gallons, tank-wagon delivery, 4 cents per gallon above undivided dealer price.

Central South District

STANDARD OIL CO. OF LOUISIANA

	Gasoline Tank-wag. dlr.	Gasoline Tank-car con'r.	Inc. tax	Kero. tank-wag.
N. Orleans, La.	19.25	16.75	*10.0	†11.0
Baton Rouge	17.25	14.75	8.0	‡10.5
Alexandria	17.25	14.75	8.0	‡12.5
Lafayette	17.50	15.00	8.0	‡12.5
Lake Charles	17.25	14.75	8.0	‡12.5
Shreveport	16.00	13.50	8.0	‡11.0
Knoxville, Tenn.	20.50	18.00	8.0	14.5
Memphis	18.50	16.00	8.0	12.5
Chattanooga	20.00	17.50	8.0	14.0
Nashville	19.50	17.00	8.0	12.0
Bristol	19.00	18.25	8.0	14.5

*Includes 2-cent parish tax. †Includes 1-cent parish tax and 1-cent state tax. ‡Includes 1-cent state tax.

Price basis to commercial consumers: Effective May 15, 1937, deliveries of 50 gallons or more in one delivery takes posted consumer tank-wagon price. Accounts taking deliveries of less than 50 gallons at one time pay posted consumer tank-wagon price plus 4 cents per gallon. Generally, the posted consumer tank-wagon price will be equivalent to the dealer price less .5 cent per gallon. Kerosene prices include 1-cent state tax.

Nebraska

STANDARD OIL CO. OF NEBRASKA

	Gasoline Tank-wag.	Gasoline Dlr.	Inc. tax	Kero. tank-wag.
Omaha	17.5	16.0	6.0	10.3
McCook	17.5	16.0	6.0	10.0
Norfolk	17.9	14.9	6.0	10.7
North Platte	18.3	15.4	6.0	11.0
Scottsbluff	17.0	13.9	6.0	11.8

Discounts to commercial consumers for tank-wagon deliveries covered only by standard commercial consumers contract, effective Jan. 1, 1935.

Oklahoma and Arkansas

CONTINENTAL OIL CO.

	Gasoline Dealer	Inc. tax	Kero. tank-wag.
Muskogee, Okla.	13.5	5.0	7.0
Oklahoma City	11.5	5.0	6.0
Tulsa	11.0	5.0	6.0
Fort Smith, Ark.	13.25	5.0	7.5
Little Rock	16.75	7.5	9.0
Texarkana	14.0	5.0	8.0

Texas

	Gasoline Tank-wag.	Gasoline Serv. sta.	Inc. tax	Kero. tank-wag.
Dallas, Tex.	14.0	17.0	5.0	8.0
Fort Worth	15.0	19.0	5.0	8.0
Houston	14.5	19.0	5.0	8.0
San Antonio	14.0	18.0	5.0	8.0

Naphtha

STANDARD OIL CO. (INDIANA)

	Tank-wagon*
Oleum spirits	15.7
V.M.&P. naphtha	16.0
Cleaners' naphtha	15.0
Stanisol	15.0

*Prices include 3-cent Illinois tax but not 1-cent federal tax or 2 per cent retail occupational tax.

Prices f.o.b. Chicago. Each price subject to discount of 1 cent per gallon for 150-gallon lots if covered by contract.

Canada*

3-Star Imperial Gasoline
IMPERIAL OIL, LTD.

	Tank-wag.	Inc. tax	Kero. tank-wag.
Halifax, N. S.	23.5	10.0	17.5
St. John, N. B.	23.5	10.0	17.5
Montreal, Que.	20.0	6.0	14.5
Toronto, Ont.	21.0	6.0	15.5
Hamilton, Ont.	21.0	6.0	15.5
Winnipeg, Man.	27.5	7.0	20.7
Brandon, Man.	28.1	7.0	22.9
Regina, Sask.	26.0	7.0	22.0
Saskatoon, Sask.	28.3	7.0	24.9
Edmonton, Alta.	26.5	7.0	21.5
Calgary, Alta.	23.5	7.0	19.0
Vancouver, B. C.	23.0	7.0	23.0

*Imperial gallon used in Canada.

Divided dealers pay tank-wagon prices. Discount to undivided dealers, 1 cent below tank-wagon price. In maritime provinces both divided and undivided dealers pay tank-wagon price.

Tank-Wagon Changes

Continental Oil Co. January 6 reduced dealer gasoline 1 cent in Fort Smith; January 7, reduced tank-wagon kerosene 2 cents in Albuquerque; January 9, reduced dealer gasoline 2 cents in Pueblo.

Socony-Vacuum Oil Co., Inc., December 17 reduced tankcar consumer gasoline .6 cent in Buffalo; December 19, reduced tank-wagon dealer gasoline .4 cent in Buffalo; November 30, advanced tank-wagon gasoline 1.2 cents in Burlington.

New York Market

(Continued from Preceding Page)

ative of the marketing territories of Pennsylvania and New York in which price disturbances have become the rule rather than the exception. Outside of Philadelphia where a price war was successfully terminated in November, 1938, the meetings have produced nothing of a tangible nature. However, the conferences may have served to reduce the spread of price cuts or cushion them as to extent or duration.

Ed Reighnor and O. Lane, employes of the Ohio Oil Co. in the Haynesville, La., area, have retired from the service of the company after reaching the age of 65.

Prices of Refined Products

All quotations f.o.b. plant in cars for interstate or export movement except as otherwise noted

Prices as of January 17, 1939

The following quotations are exclusive of the federal excise taxes of 1 cent a gallon on gasoline and 4 cents a gallon on lubricating oils.

Refinery Gasoline

OKLAHOMA (Group 3)—

U. S. Motor grades:		
62 octane and below	.03¼	.03⅜
63-66 octane	.03⅞	.04
67-69 octane	.04⅛	.04¼
70-72 octane (regular)	.04⅜	.04½
60-62 400 grades:		
62 octane and below	.03¼	.03½
63-66 octane	.03⅞	.04
67-69 octane	.04⅛	.04¼
70-72 octane (regular)	.04⅜	.04⅝
64-66 375	.04	.04⅛
68-70 360	.05	.05⅛

NORTH TEXAS—

U. S. Motor grades:		
62 octane and below	.03¼	.03⅜
63-66 octane	.03⅞	.04
67-69 octane	.04⅛	.04¼
70-72 octane (regular)	.04⅜	.04⅝
60-62 400	.03⅜	.03⅝
64-66 375	.04	.04⅛

NORTH LOUISIANA (Ark. and N. La delivery)—

U. S. Motor grades:		
62 octane and below	.04	.04⅛
63-66 octane	.04¼	.04½
67-69 octane	.04½	.04⅝
70-72 octane (regular)	.04⅞	.05⅛

ARKANSAS (Ark. and N. La. del.)—

U. S. Motor grades:		
62 octane and below		.04
67-69 octane	.05	.05⅛

CHICAGO (Based on Group 3)—

U. S. Motor grades:		
62 octane and below	.03⅛	.03⅜
63-66 octane	.03⅞	.04⅛
67-69 octane	.04⅛	.04⅜
70-72 octane	.04⅜	.04⅝
60-62 400 grades:		
62 octane and below	.03⅛	.03⅜
63-66 octane	.03⅞	.04¼
67-69 octane	.04⅛	.04⅜
70-72 octane	.04⅜	.04⅝
64-66 375	.04	.04¼
68-70 360	.05	.05¼

PENNSYLVANIA (inland refineries)—

58-60 U. S. Motor:		
Below 60 octane	.04¼	.04¾
65 octane		.06¼
68-70 octane		.06½

CALIFORNIA (domestic movement)—

54-58 U. S. Motor	.06½	.08
58-60 400, 65 oct. and higher	.07½	.09

EAST COAST (domestic)—

U. S. Motor, 60-64.9 octane:		
New York (Bayonne)	.06	.06⅛
Philadelphia	.06	.06¼
Boston	.06¼	.06½
Baltimore	.06	.06¼
Charleston, S. C.	.06¾	.07
U. S. Motor, 65 and above:		
*New York (Bayonne)	.06½	.06⅝
Philadelphia	.06½	.06⅜
Baltimore	.06½	.06⅝
Charleston, S. C.	.07	.07¼

*All grades of gasoline one-eighth to one-fourth cent less for barge shipments. New York Harbor prices are for New York and New England delivery. Prices for New Jersey delivery one-fourth cent lower.

GULF COAST (domestic)—

U. S. Motor grades:		
Below 60 octane		.04¼
60-64.9	.04½	.04⅝
65 octane and higher		.04⅝
68-70		.05

Naphtha

PENNSYLVANIA (inland refineries)—

52-56 450 (blending)	.04¼	.04½

Natural Gasoline

OKLAHOMA (Group 3)—

Grade 26-70	.02¾
Grade 18-55	.03¼

NORTH TEXAS—

Grade 26-70	.02¾
Grade 18-55	.03¼

CALIFORNIA—

75-85 375-390	.06¼	.06¾

NORTH LOUISIANA (Ark. and N. La. delivery)—

Grade 26-70	.03⅛

Tractor Fuel

OKLAHOMA (Group 3)—

40-42 gr., 315-325 l.b.p., 110-flash, 540-550 e.p.	.03¾	.03⅞
41-43 gr., 300-320 l.b.p., 110-125 flash, 500-520 e.p.	.04	.04¼
46-48 gr., 210-230 l.b.p., 480-max., e.p.	.04⅜	.04⅝

Kerosene

(All kerosene water white)

OKLAHOMA (Group 3)—

41-43	.03⅞	.04
42-44	.04⅛	.04¼

NORTH TEXAS—

41-43	.04	.04⅛

NORTH LOUISIANA (Ark. and N. La delivery)—

41-43	.04	.04⅜

ARKANSAS (Ark. and N. La. del.)—

41-43	.04½

PENNSYLVANIA (inland refineries)—

45	.04⅝	.04⅞
46	.04¾	.05
47	.04⅞	.05⅛

CHICAGO (Based on Group 3)—

41-43	.03⅞	.04⅛
42-44	.04⅛	.04⅜

CALIFORNIA (Pac. Coast market)—

38-43 high burning test	.04⅝	.05¾

NEW YORK (Bayonne, N. J.)—

41-43	.04⅝	.04¾

***GULF COAST (domestic)—**

41-43	.03¾	.04

*Barge price one-eighth cent lower.

Furnace Oil

OKLAHOMA (Group 3)—

Range oil	.03⅝	.03¾
No. 1 prime white, 38-42	.03½	.03⅝
No. 1 straw, 38-40	.03⅜	.03½
No. 2 straw, 32-36	.03¼	.03⅜
No. 2 dark, 32-36	.03⅛	.03¼
No. 3 zero to 15, 28-32	.03	.03¼
No. 3, 15 and above, 28-32	.02¾	.02⅞

NORTH TEXAS—

No. 1 prime white, 38-42	.03⅝	.03¾
No. 1 straw, 38-40	.03½	.03⅝

NORTH LOUISIANA (Ark. and N. La delivery)—

No. 2, 32-36	.03⅜	.03⅝

ARKANSAS (Ark. and N. La. del.)—

No. 2, 32-36	.03⅝

CHICAGO (Based on Group 3)—

Range oil	.03¾	.03⅞
No. 1 prime white, 38-40	.03⅝	.03¾
No. 1 straw, 38-40	.03½	.03⅝
No. 2 straw, 32-36	.03¾	.03½
No. 2 dark, 32-36	.03½	.03⅝
No. 3, zero to 15, 28-32	.03½	.03¼
No. 3, 15 and above, 28-32	.02⅞	.03

NEW YORK (Bayonne, N. J.)—

*No. 1	.04½	.04⅝
*No. 2		.04
*No. 4		.04

*Barge deliveries one-eighth to one-fourth cent under above tankcar price.

Gas Oil and Fuel Oil

(Gas oil per gal., fuel oil per bbl.)

OKLAHOMA (Group 3)—

U.G.I. gas oil	.02⅞	.03⅛
No. 4, low pourpoint, 24-28	1.00	1.10
No. 4, 15 and above, 24-28	.85	.90
No. 5, low pourpoint, 18-22	.70	.75
Below 14 fuel oil, industrial	.50	.60

NORTH TEXAS—

U.G.I. gas oil	.02⅞	.03⅛
No. 4, low pourpoint, 24-28	1.00	1.10
No. 5, low pourpoint, 18-22	.70	.75
Below 14 fuel oil, industrial	.50	.60

NORTH LOUISIANA (Ark. and N. La delivery)—

10-14 fuel oil, industrial	.70	.75

CHICAGO (Based on Group 3)—

U.G.I. gas oil	.02¾	.02⅞
No. 4, low pourpoint, 24-28	1.00	1.10
No. 4, 15 and above, 24-28	.85	.95
No. 5, low pourpoint, 18-22	.70	.80
No. 5, 15 and above, 18-22	.60	.70
No. 6, low pourpoint, 10-16	.60	.70
No. 6, 15 and above, 10-16	.35	.45

PENNSYLVANIA (inland refineries)—

36-40	.03¾	.04⅛

CALIFORNIA—

Los Angeles:		
30-40 gas oil, per bbl.	1.15	1.35
24 plus Diesel, per bbl.	1.00	1.30
24 plus Diesel (bunkers)	1.15	1.50
12-16 (bunkers at tidewater)	.75	.90
10-16 (cargo lots)	.60	.80
12-17 (tankcars)	.50	.80
10-17 (high sulfur)	.45	.70
San Joaquin Valley:		
10-18 (tankcars)	.50	.80
24 plus Diesel, per bbl.	1.15	1.40
San Francisco:		
24 plus Diesel, per bbl.	1.40	1.45
24 plus Diesel (bunkers)	1.45	1.55
10-16 (bunkers)	.90	.95

GULF COAST—

No. 2 fuel		.03½
43-47 Diesel		.03¾
48-52 Diesel	.03½	.03⅝
53-57 Diesel	.03⅝	.03¾
Bunker C (bulk cargoes)		.70
Bunker C (bunkers)		.75

NEW YORK (Bayonne, N. J.)—

27 plus, gas oil		.04¼
28-30 Diesel (lighterage 6¼c per bbl.)		1.75
28-30 Diesel (tankcars)	.04¼	.04½
Bunker C (to ocean-going ships in N. Y. Harbor)		.95
Industrial fuel (tankcars)	.03¾	.04

Lighterage charge 5c bbl. additional.

Bright and Steam Refined

OKLAHOMA (Group 3)—

190-200 D, 15-25		.19
150-160 D, 0-10	.14¼	.16
150-160 D, 15-25	.13½	.15½
150-160 E, 15-25	.13	.15
100-110 D, 0-10		.14½
Steam refined:		
631 green (treated)		.12½
600 dark green (untreated)	.04½	.05

PENNSYLVANIA—

Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):		
10 pourpoint	.17	.17½
15 pourpoint	.16	.16½
20 pourpoint	.15	.15½
25 pourpoint	.14	.14½
Steam refined:		
600	.08	.08½
650	.10	.10½
600 Pennsylvania flash	.10½	.11
630 flash	.13½	.14
600 Warren E filtered	.12½	.13

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—

150-3	.09
180-3	.10
180-4	.09½
200-3	.10½
200-4	.10
250-3	.11½
250-4	.11
280-3	.12½
280-4	.12
300-6½	.13
400-3½	.14
100-2½ paraffin oil	.06
15-20 pourpoint:	
200-3	.10
200-4	.09½
250-3	.11
250-4	.10½
280-3	.12
280-4	.12½

GULF COAST—

Pale oils:		
200-3	.07	.07¼
300-3	.07½	.07¾
500-3½	.08½	.08¾
750-3½	.08¾	.09¼
1,200-3½	.09½	.09¾
1,500-4	.09¾	.10
Red oils:		
200-5-6	.07¼	.07½
300-5-6	.07¼	.07½
500-5-6	.08	.08½
750	.08¾	.09
1,200-5-6	.09¼	.09½

CALIFORNIA (moving to dom. market)—

Pale oils:		
100-2½-3	.07¼	.08
200-2½-3	.07¼	.08
300-2½-3	.07¼	.08
400-3-4	.07¼	.08
450-3-4	.07¼	.08
550-3-4	.09	.11
600-3-4	.09	.11
Red oils:		
200-4-5	.07¼	.08
300-5-6	.07¼	.08
350-5-6	.09¼	.11½
400-5-6	.09¼	.11½
450-5-6	.09¼	.11½
500-5-6	.09¼	.11½
600-5-6½	.09¼	.11½
700-6½ plus	.09¼	.11½
750-6½ plus	.09¼	.11½
900-6½ plus	.09¼	.11½

PENNSYLVANIA—

150 vis. at 70° F., 3 color, 400-405 flash:		
Zero pourpoint	.16	.16½
10 pourpoint	.15	.15½
15 pourpoint	.14	.14½
25 pourpoint	.13	.13½
200 vis. at 70° F., 3 color:		
Zero pourpoint	.18	.18½
10 pourpoint	.17	.17½
15 pourpoint	.16	.16½
25 pourpoint	.15	.15½

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—

124-126 (a.m.p.) w.c. scale	.0235	.0250

PENNSYLVANIA (inland refineries)—

122-124 (a.m.p.) w.c. scale	.0235	.0245
124-126 (a.m.p.) w.c. scale	.0235	.0245

NEW YORK—

Wax in bags fully refined:	
122-125 (a.m.p.) wax	.0375
125-127 (a.m.p.) wax	.0390
128-130 (a.m.p.) wax	.0400
130-132 (a.m.p.) wax	.0435
133-135 (a.m.p.) wax	.0465
135-137 (a.mp) wax	.0490
124-126 (a.m.p.) w.s.	.0230
124-126 (a.m.p.) y.s.	.0230
Petrolatum in barrels, carload lots:	
Dark green	.02 .02½
Amber	.02⅜ .02½
Extra amber	.02⅝ .02¾
Lily white	.05½ .05¼
Snow white	.06¼ .06¼
Cream	.04¼ .04¼

Export Prices

GASOLINE

GULF COAST—

U. S. Motor	.04⅜	.04½
60-62 400	.04⅜	.04½
61-63 390	.04½	.04⅝
64-66 375	.04½	.04⅝

LOS ANGELES—

U. S. Motor grades:		
55-65 octane		.05
65-69 octane		.05¼
Above 69 octane		.05½

KEROSENE

GULF COAST—

41-43 prime white	.03¾	.04
41-43 water white	.03⅞	.04

LOS ANGELES—

41-43 water white	.05	.05¼

LUBRICANTS

(Pennsylvania Grade)

NEW YORK (f.a.s. in bbls.)—

Cylinder stocks:		
600 Warren E	.15	.15½
600 S.R. unfiltered	.16	.16½
630 S.R. unfiltered	.17	.17½
600 flash, S.R.	.17	.17½
630 flash, S.R.	.20½	.21
Bright stocks:		
8 color	.16¼	.16½

NEUTRAL OIL

200-3 color	.21½	.22
150-3 color	.19½	.20

PARAFFIN WAX

NEW YORK (prices per pound)—

123-125 a.m.p.	.0375
125-127 a.m.p.	.0387
128-130 a.m.p.	.0412
133-135 a.m.p.	.0437
135-137 a.m.p.	.0455
Crude scale:	
124-126 w.s.	.0235 .0245
124-126 y.s.	.0235 .0245

Crude Oil Prices

Oklahoma, Kansas, North Central and East Central Texas

East Texas (Oct. 11, 1938)* $1.10
Van, Tex. (Oct. 11, 1938)* ..... .93
Talco, Tex. (Oct. 11, 1938)* ..... .55
Rodessa, Tex. ..... See gravity schedule
Cass and Panola counties, Texas ..... See gravity schedule
Altus and Tipton† ..... See note below
Cayuga, Tex. (Oct. 12) ..... .81
Clay Creek, Tex. ..... .85

*Humble Oil & Refining Co. †Gulf Refining Co.

Altus and Tipton, Okla., starting at below 25 degrees at 71 cents, 2-cent spread to 40 degrees and above at $1.03. East Texas price met by all buyers posting prices. Talco price adopted by Talco Pipe Line on October 11. Cayuga posted by Tide Water Associated Oil Co. Clay Creek posted by Sun Oil Co.

Gulf Coast

Conroe, Tex. (Oct. 11, 1938)* $1.27
Black Bayou and White Castle, La. (Oct. 11, 1938)† ..... See note below
Gibson, La. (Oct. 11, 1938)† 1.04
Garden Island, La. (Oct. 12, 1938)‡. 1.24
Lafitte, La. (Oct. 12, 1938)‡ 1.04
Cleveland, Tex. (Oct. 12, 1938)¶ .. 1.14
Hardin, Tex. (Oct. 12, 1938)¶ 1.02
Tepetate, La. (Oct. 11, 1938)§ 1.03
Villa Platte, La. (Oct. 11, 1938)§ 1.03
Abbeville, La. (Oct. 11, 1938)§ ..... See note below
Bosco, La. (Oct. 13, 1938)¶ 1.02
Creole, La. (Oct. 12, 1938)¶ ..... .96
Gueydan, Sweet Lake, and Louise, La. (Oct. 13, 1938)¶ ..... See note below
Vinton, Edgerly, Starks, Hackberry, Timbalier Bay, Quarantine Bay, and Grand Bay, La. (Oct. 13, 1938)** 1.08
Long Lake, Tex. (Oct. 13, 1938)** 1.08
Segno and Wing (Oct. 13, 1938)** ..... See note below
Livingston (Oct. 11, 1938)† 1.10
Gibson, La. (Oct. 11, 1938)† 1.04

*Humble Oil & Refining Co. †Shell Petroleum Corp. ‡Texas Co. §Continental Oil Co. ¶Magnolia Petroleum Co. ‖Pure Oil Co. **Gulf Refining Co.

Black Bayou, etc., starts at below 20 degrees at 79 cents; 20-20.9, 81 cents; 21-21.9, 83 cents, then a 3-cent spread to 26-26.9 degrees, 98 cents, and 27 degrees and over $1. Abbeville starts at below 36 degrees, $1.01, 2-cent spread to 40 degrees and over at $1.11. Gueydan, etc., starts at below 20 degrees, 79 cents, 3-cent spread to 26-26.9 degrees at $1, and 2-cent spread to 40 degrees and over at $1.28. Segno and Wing take Gulf Refining Co.'s Gulf Coast prices. Vinton, Edgerly, etc., schedule starts at below 18 gravity, 76 cents, 2-cent spread to 20-20.9 at 82 cents; then a 3-cent spread to 26-26.9 at $1; then a 2-cent spread to 34 degrees and over at $1.16.

Southwest Texas

Salt Flat, Darst Creek, Hilbig, Carroll, Clark and Zoboroski (Oct. 11, 1938)* ..... $ .96
Pettus (Oct. 11, 1938)* 1.29
Flour Bluff (Dec. 3, 1938)* 1.23
Darst Creek (Oct. 12, 1938)† ..... .96
Darst Creek and Bruner (Oct. 13, 1938)‡ ..... .96
Luling (Oct. 12, 1938)† ..... .87
Lytton Spings (Oct. 12, 1938)† ..... .99
Mirando (Oct. 12, 1938)† ..... .
Government Wells (Oct. 13, 1938) ..... See note below

*Humble Oil & Refining Co. †Magnolia Petroleum Co. Pettus price adopted by Atlantic Crude Oil Purchasing Co. ‡Gulf Refining Co.

Government Wells posted by Sun Oil Co. starts at 20 gravity, 77 cents, 3-cent spread to 24-24.9 at 89 cents.

North Louisiana and Arkansas

Smackover, Ark. (Oct. 5, 1938)* ... $ .73
Buckner, Magnolia, and Village, Ark. (Oct. 5, 1938)* ... See note below
Schuler, Jones sand ..... See note below
Tullos and Urania ..... .89
Cotton Valley, La. (distillate) (Dec. 23, 1938)* 1.20
Lisbon, La. (Sept. 19, 1938) ..... See note below

*Smackover posted by Standard Oil Co. of Louisiana, October 5, 1938; by Magnolia Petroleum Co., October 12; by Gulf Refining Co., October 13; McMillan Refining Co. and Cross Refining Co. met price. Tullos and Urania posted by Hunt Oil Co. and Arkansas Fuel Oil Co.

Schuler Jones sand schedule starts at below 25 degrees, 66 cents, with 2-cent spread to 40 and over at 98 cents; by Lion Oil Refining Co. on October 5, 1938; Schuler light Morgan sand crude takes North Louisiana gravity scale along with El Dorado and Champagnolle: by Lion Oil Refining Co., October 5; Buckner, Magnolia, and Village schedules posted by Standard Oil Co. of Louisiana and Lion Oil Refining Co. on October 5; quote same prices as for Schuler Jones sand crude.

Middle Western States

OHIO OIL CO.
(Effective October 13, 1938)

Lima, Ohio ..... $ .90
Illinois old fields 1.05
Illinois basin 1.15
Princeton, Ind. 1.05
Western Kentucky 1.10
Greendale, Porter, and Crystal, Mich. (Jan. 6, 1939)* ..... .92½
Buckeye, Bentley, Edenville, Beaverton, Mich. (Jan. 6, 1939)* ..... .90
Freeman-Redding, Mich, (Jan. 6, 1939)* ..... .82
West Branch and Arenac, Mich. (Dec. 13, 1938)* ..... .70
Allegan (Jan. 6) ..... .78
Bloomingdale (Dec. 19) ..... .84
Muskegon 1.00
Sherman, Mich. (Dec. 13, 1938)‡ ... .82
Eastern Kentucky:
Big Sandy River† 1.12
Kentucky River† 1.20

*Simrall Corp. †Ashland Refining Co. ‡Pure Transportation Co.

Rocky Mountain States

Dry Creek, Wyo. (Oct. 11, 1938)* ..$ .92
Elk Basin, Wyo. (Oct. 11, 1938)*† .. .90
Grass Creek, light, Wyo. (Oct. 11, 1938)*† ..... .90
Grass Creek, heavy (Oct. 11, 1938)† .40
Lance Creek, Wyo. (Oct. 11, 1938)* .77
Rock Creek, Wyo. (Oct. 11, 1938)* .. 1.00
Iles, light, Colo. (Oct. 11, 1938)† .... .98
Iles, heavy, Colo. (Oct. 11, 1938)† ... .92
Dutton Creek, Wyo. (Oct. 11, 1938)† ..... See note below
Frannie, light, Wyo. (Oct. 11, 1938)† .55
Frannie, heavy, Wyo. (Oct. 11, 1938)† ..... .42
Hamilton dome, Wyo. (Oct. 11, 1938)† ..... .35
Midway, Wyo. (Oct. 11, 1938)† ..... See note below
Salt Creek Tensleep crude, Wyo. (Oct. 11, 1938)† ..... .846
Salt Creek (Oct. 11, 1938) ... See note below
Canon City, Colo. (Oct. 11, 1938)‡ .. .90
Florence, Colo. (Oct. 11, 1938)‡ ..... .90
Cat Creek, Mont. (Oct. 11, 1938)‡ ... 1.10
Big Muddy, Wyo. (Oct. 11, 1938)‡ .... .98
Lance Creek, Wyo. (Oct. 11, 1938)‡. .77
Lea County, N. M. ..... See West Texas gravity schedule‡
Artesia, Jackson and Maljamar ..... See gravity table‡
Fort Collins and Wellington, Colo. ..... See gravity table‡
Eddy County, N. M. (October 11, 1938)¶ ..... .77

*Ohio Oil Co. †Stanolind Oil & Gas Co. ‡Continental Oil Co. ¶Sinclair Prairie Oil Marketing Co.

Dutton Creek and Salt Creek Tensleep crude start at below 29 degrees, 86 cents, 2 cents spread to 40 and over at $1.10. Salt Creek crude excepting Tensleep. takes Standard Oil Co. of Indiana Oklahoma-Kansas prices. Stanolind Oil & Gas Co., effective October 11, discontinued posting prices in Greybull-Torchlight, Wyo., and Hogback and Hospah, N. M.

Eastern States

SOUTH PENN OIL CO.
(Effective September 1, 1938)

Pennsylvania Grade Oil in National Transit Lines (Bradford field) ... $1.68
Pennsylvania Grade Oil in Southwest Pennsylvania Lines 1.34
Pennsylvania Grade Oil in Eureka Pipe Line lines 1.26
Pennsylvania Grade Oil in Buckeye Pipe Line lines 1.18
Corning Grade Oil in Buckeye Pipe Line Co. line (Oct. 18, 1938) .... .97

TIDE WATER ASSOCIATED OIL CO. and NEW YORK TRANSIT CO.
(Effective September 1, 1938)

Bradford, Pa. $1.68
Allegany, N. Y. 1.68

PENNZOIL CO.

Group A $1.61
Group B 1.60
Group C 1.50
Group D 1.58
Group E 1.56

PURE OIL CO.
(Effective September 1, 1938)

West Virginia $1.28

West Texas

See gravity table.
Pecos County (Oct. 11, 1938)* ..... $ .78
Pecos shallow (Oct. 11, 1938)† ..... .65

*Shell Petroleum Corp., Gulf Pipe Line Co. and Humble Oil & Refining Co. †Shell Petroleum Corp.

Canada

Ontario (Oct. 25, 1938)*

Petrolia $1.90
Oil Springs 1.97

TURNER VALLEY
(January 5, 1938, by Imperial Oil, Ltd.)

Clear naphtha and discolored naphtha, 65 gravity and higher $2.14
Discolored naphtha and crude oil, 40-40.9 gravity 1.14
Increasing 2 cents for each degree gravity with top price for 64-64.9 gravity 1.62
These prices f.o.b. producers field tankage.

*Imperial Oil, Ltd.

Rocky Mountain Runs

Production estimates for week ended January 14:

	Bbls.
WYOMING	
Salt Creek	15,090
Big Muddy	1,200
Badger Basin	180
Cody Dome	50
Cole Creek	110
Dallas Derby	350
Dewey Dome	10
Dutton Creek	50
Elk Basin	570
Frannie	1,550
Garland	1,740
Grass Creek	1,860
Hidden Dome	60
Hudson	210
LaBarge	790
Lance Creek	12,230
Lost Soldier	1,810
Mahoney	200
Medicine Bow	2,290
Mule Creek	200
Oregon Basin	2,200
Osage	800
Quealy Dome	640
Rock River	2,680
Spindletop	20
Poison Spider	250
Teapot	10
Warm Springs	1,280
Total Wyoming	48,410
MONTANA	
Border	110
Cat Creek	520
Cut Bank	8,280
Dry Creek	680
Kevin-Sunburst	3,630
Lake Basin	10
Pondera	430
Total Montana	13,660
COLORADO	
Florence	90
Fort Collins & Wellington	320
Wilson Creek	290
Iles Dome	2,230
Moffat	340
Orchard	30
Rangely	90
Tow Creek	140
Price	550
Total Colorado	4,080
NEW MEXICO	
Cooper	4,240
Eaves	810
West Eunice	100
Eunice	21,890
Hardy	2,860
Hobbs	12,850
Jal	890
Langlie	4,350
Lynch	490
Lynn	810
Mattix	3,150
Monument	22,360
North Lynch	40
Penrose	5,410
Rhoades	160
Skelly	1,780
South Eunice	2,900
Vacuum	6,210
Artesia-Maljamar	8,380
Getty	100
Hogback	200
Rattlesnake	680
Table Mesa	80
Total New Mexico	100,740
Total Rocky Mountain Region	166,890

Crude Prices by Gravities

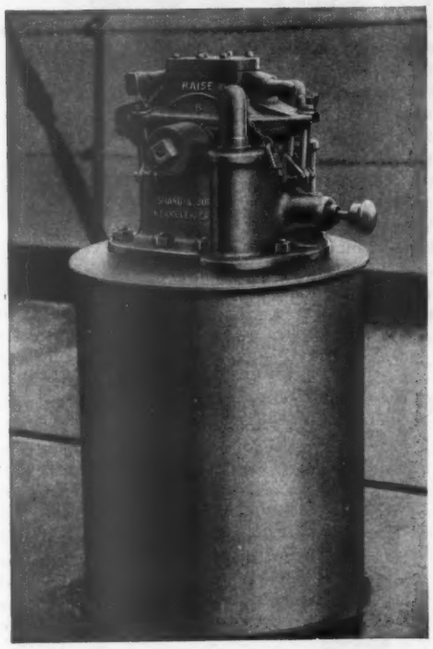
	1 Oklahoma	2 Oklahoma and Kansas	3 North and Central Texas	4 Louisiana and Arkansas	5 East Central Texas	6 Gray County, Texas	7 Hutchinson and Carson counties, Texas	8 Raccoon Bend, Satsuma and Tomball, Texas	9 West Texas and Lea County, N. M.	10 Fort Collins and Wellington, Colo.	11 Anahuac and Dickinson, Texas	12 Refugio, Texas	13 Mirando and Duval Texas	14 Gulf Coast Texas	15 Cass and Panola counties, Texas	16 Beaumont and West Beaumont, Texas	17 Lockport, Iowa, Cameron Meadows, Louisiana	18 Artesia, Jackson, and Maljamar, N. M.	19 Iowa, Louisiana
Below 18	....	....	....	....	....	....	....	....	$.53	....	$.74	$.79	$.74	$.79	....	....	$.74	....	$.75
18-18.9	....	....	....	....	....	....	....	....	.53	....	.74	.79	.74	.79	....	....	.76	....	.77
19-19.9	....	....	....	....	....	....	....	....	.53	....	.74	.79	.74	.79	....	$.79	.78	....	.79
20-20.9	$.60	$.70	....	....	....	....	....	....	.55	....	.77	.82	.77	.82	....	.82	.80	....	.81
21-21.9	.63	.72	....	....	....	....	....	....	.57	....	.80	.85	.80	.85	....	.85	.82	....	.83
22-22.9	.66	.74	....	....	....	....	....	$.95	.59	....	.83	.88	.83	.88	....	.88	.85	....	.86
23-23.9	.69	.76	....	....	$.78	....	....	.97	.61	....	.86	.91	.86	.91	....	.91	.88	....	.89
24-24.9	.72	.78	$.71	....	.80	....	....	.99	.63	....	.89	.94	.89	.94	....	.94	.91	....	.92
Below 25	....	....	....	$.73	....	....	....	....	....	....	....	....	....	....	$.73	....	....	....	....
25-25.9	.75	.80	.73	.75	.82	....	....	1.01	.65	....	.92	.97	.92	.97	.75	.97	.94	....	.95
26-26.9	.78	.82	.75	.77	.84	....	....	1.03	.67	....	.95	1.00	.95	1.00	.77	1.00	.97	....	.98
27-27.9	.81	.84	.77	.79	.86	....	....	1.05	.69	....	.97	1.02	.97	1.02	.79	1.02	.99	....	1.00
28-28.9	.84	.86	.79	.81	.88	$.72	$.67	1.07	.71	$.81	.99	1.04	.99	1.04	.81	1.04	1.01	$.61	1.02
29-29.9	.87	.88	.81	.83	.90	.74	.69	1.09	.73	.83	1.01	1.06	1.01	1.06	.83	1.06	1.03	.63	1.04
Below 30	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
30-30.9	.90	.90	.83	.85	.92	.76	.71	1.11	.75	.85	1.03	1.08	1.03	1.08	.85	1.08	1.05	.65	1.06
31-31.9	.92	.92	.85	.87	.94	.78	.73	1.13	.77	.87	1.05	1.10	1.05	1.10	.87	1.10	1.07	.67	1.08
32-32.9	.94	.94	.87	.89	.96	.80	.75	1.15	.79	.89	1.07	1.12	1.07	1.12	.89	1.12	1.09	.69	1.10
33-33.9	.96	.96	.89	.91	.98	.82	.77	1.17	.81	.91	1.09	1.14	1.09	1.14	.91	1.14	1.11	.71	1.12
34-34.9	.98	.98	.91	.93	1.00	.84	.79	1.19	.83	.93	1.11	1.16	1.11	1.16	.93	1.16	1.13	.73	1.14
Below 35	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
35-35.9	1.00	1.00	.93	.95	1.02	.86	.81	1.21	.85	.95	1.13	1.18	1.13	1.18	.95	1.18	....	.75	....
36-36.9	1.02	1.02	.95	.97	1.04	.88	.83	1.23	.87	.97	1.15	1.20	1.15	1.20	.97	1.20	....	.77	....
37-37.9	1.04	1.04	.97	.99	1.06	.90	.85	1.25	.89	.99	1.17	1.22	1.17	1.22	.99	1.22	....	.79	....
38-38.9	1.06	1.06	.99	1.01	1.08	.92	.87	1.27	.91	1.01	1.19	1.24	1.19	1.24	1.01	1.24	....	.81	....
39-39.9	1.08	1.08	1.01	1.03	1.10	.94	.89	1.29	.93	1.03	1.21	1.26	1.21	1.26	1.03	1.26	....	.83	....
40 and over	1.10	1.10	1.03	1.05	1.12	.96	.91	1.31	.95	1.05	1.23	1.28	1.23	1.28	1.05	1.28	....	.85	....

Effective December 3, 1938, Humble Oil & Refining Co. revised its October price schedules as shown in Columns 3, 6, 7, 8, 11, 12, and 13. The only changes made were the discontinuance of prices on crude of 41, 42, 43, 44, and 45 degrees and over. Humble's new schedule stops at 40 degrees and over. Companies that met Humble's schedule of October 11, have conformed to the revised price schedule, stopping at 40 degrees and over.

New or Improved Equipment

Shand & Jurs Co. Introducing New Automatic Tank-Gauge

An automatic tank-gauge for giving a quick, accurate and safe measurement of the contents of oil-tanker or barge cargo is one of a line of



marine fittings recently introduced by Shand & Jurs Co., Berkeley, Calif., long identified with the manufacture of fittings for petroleum storage and truck tanks. This new gauge eliminates the vapor losses and hazards attendant in open-hatch gauging. The gauge employs a float, which is held at rest on a hanger during voyage. The tape is read through a heavy glass window equipped with a wiper. The gauge may be mounted flush with the deck, or on a truck to elevate it above the sea wash.

Bulletins, Booklets and Other Literature for the Trade

The Brown Instrument Co., Wayne and Roberts Avenues, Philadelphia, Pa., has published a new folder, No. G-37, illustrating the complete line of indicating, recording and controlling instruments for measuring and controlling temperatures, pressures, flows, liquid levels and humidity. Typical installations are shown, where instrument investments have been repaid many times over in "reclaimed losses."

Many production engineers will preserve the 12-page booklet obtainable from Allied Steel Products Corp., 1407 North Peoria Avenue, Tulsa. Besides describing the Allied straight-lift underpull jack, the booklet presents valuable charts including one showing rod and tubing stretch, along with a discussion of the production of crude oil by means of surface equipment.

The latest issue of the Neoprene Notebook, published by the Rubber Chemicals Division of E. I. Du Pont de Nemours & Co., Inc., Wilmington, Del., contains among its articles one on "Neoprene Wipes Scale from the Valve-Seat" and one on "Materials Weakened by Exposure to Oil Will Not Withstand Abrasion."

Babcock & Wilcox Tube Co., Beaver Falls, Pa., offers a useful publication, Technical Bulletin 9, describing methods of working seamless tubes and pipe of intermediate grades of B&W Croloys containing chromium molybdenum, and other alloying elements.

J. H. Shaffer Co., 621 East Cameron Street, Tulsa, is mailing to those who ask for it a folder describing the Shaffer Come-Along, an all-purpose hand-power unit for tightening pull-rods, placing heavy machinery on engines, skidding buildings, handling sections of pipe line, pulling cars out of mud, etc.

Ryerson certified steels are pictorially explained in a handsome 28-page book obtainable from Joseph T. Ryerson & Son, Inc., Sixteenth and Rockwell Streets, Chicago. The book says heat-treating costs can be reduced while producing more uniform, more dependable results and tells how. Included is a digest of standard and special alloys along with hints on heat-treating.

Flexible Metal Hose & Tubing Institute, 150 Broadway, New York, announces a booklet "The Fact Book of Flexible Metal Hose and Tubing" which presents a story of these products while portraying their usefulness in meeting many of industry's most difficult design, construction and maintenance problems.

Bulletins B-420 and B-430, describing Yarway blowoff valves for steam boilers, have been prepared for distribution by Yarnall-Waring Co., Chestnut Hill, Philadelphia, Pa. Recent changes and improvements are covered.

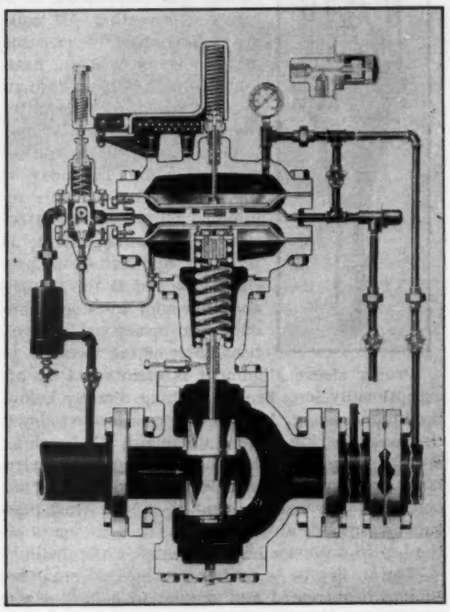
Skullgard and Welding Shield Are Combined in One Device

An ingenious new M.S.A. combination Skullgard-welding shield is announced by Mine Safety Appliances Co., Braddock, Thomas and Meade Streets, Pittsburgh, Pa. The comfort and protection of a standard cap-type Skullgard are combined

in this unit with the latest model one-piece welding shield, which pivots to up or down positions at will. The Skullgard may be detached easily and quickly from the shield and worn separately for other work when desired. A bulletin describes this new safety device more in detail.

Leakage of Gas Is Lessened by Fisher-King Pressure Booster

After more than five years of development and testing in the field on 157 installations, Fisher Governor Co., Marshalltown, Iowa, has announced



its Fisher-King gas pressure booster. According to the company, this device enables gas system pressures to be lowered 25 to 50 per cent, with corresponding reductions in leakage or "unaccounted for" gas.

The booster operates automatically, reducing man hours and truck mileage. Automatic operation also results in better regulated pressures, which in turn, cut down consumer complaints.

The Fisher-King booster maintains a constant pressure at the low-pressure point in the distribution system, regardless of the demand load. This is accomplished by boosting the downstream or reduced pressure in the system to correspond with, and counteract exactly, the pressure drop caused by friction in the downstream or reduced pressure piping system. The booster can be used for reduced pressures in either inches of water column or ounces, but finds its widest application for pounds per square inch pressures with values up to 300 pounds per square inch, or higher. A 24-page book on this new device is available.

Oliver Assistant Sales Manager

Well Equipment Manufacturing Corp., Houston, Tex., has appointed E. L. Oliver assistant sales manager. Mr. Oliver has been a member of the sales staff of the "Weco" organization for the past two years. Before his appointment he was company representative in the Illinois territory, where he was transferred several months ago from the Oklahoma fields. He will work out of Houston headquarters in the future.

Swivels Designed for Shallow and Medium-Depth Drilling

Manufactured to meet the demand for light and dependable swivels for shallow and medium-depth drilling, the Emsco Type AB-4 and AB-6 swivels are the latest additions to the line offered by the Continental Supply Co., Dallas, Tex.

To avoid distortion under heavy loads and to provide a rigid support for all bearings, the housing for the AB swivels is accurately designed and constructed of a heavy steel casting. All loads are taken directly on this main housing without passing through bolts, eliminating the need of constantly tightening bolts in an attempt to prevent oil leakage and eccentric loading. The body of the AB swivels is heavily reinforced where the loads occur. Accurate alignment of the bail application is precisely checked at the factory and thorough tests are conducted to insure perfect vertical hang of the swivel.

Proper sleeve alignment is maintained by an exceptionally long bronze bushing directly below the main bearing. A ball bearing is located above the main bearing to take up thrust. All bearings are submerged in oil. The oil reservoir is extra large and extends completely around the bearing body. An expansion chamber in the wash-pipe supporting assembly is provided with vents at the top to dissipate heat generated while drilling.

The wash-pipe is made of carburized seamless tubing, heat-treated and ground to a hard glass-like surface which minimizes wear on the wash-pipe and packing. This durable wash-pipe is packed off from the sleeve by self-sealing V-type packing, to give perfect sealing and eliminates the need of adjusting wash-pipe glands with wrenches. Lubricated by the alemite system, this design reduces replacements of both packing and wash-pipe. Protection against mud and water is afforded by a mud-slinger at the top of the sleeve.

Specifications and recommended depths to be drilled by the AB swivels at various drilling speeds are contained in an illustrated bulletin.

Nonsparking Flexible Coupling Designed to Increase Safety

A flexible coupling for handling misalignment, starting torque, absorbing shocks, etc., on direct-connected machinery, which the manufacturer

says will provide increased safety and lower maintenance, is announced by Lovejoy Flexible Coupling Co., Chicago.

Recent investigations of operating conditions in certain industries where explosive and inflammable gases, vapors, and liquids are handled, are said to indicate the need of a flexible coupling of this type as a measure of safety. The body of this new L-R flexible coupling is made of Tobin bronze. This metal will not spark under any conditions. The spider or resilient load cushion is made from rubber, duck, leather, or a brake-lining material of woven asbestos. The three-piece construction (two Tobin bronze flanges and one-piece cushion spider) makes assembly and installation quick and easy. The spider member has sufficient resilience to safeguard the connected machines against overloads and misalignments. The couplings are quiet in operation and require no lubrication. L-R Type I-A safety couplings are made in the standard sizes with bores from 1 to 2¼ inches inclusive (2- to 90-horsepower at 1,750 r.p.m.).

Three Products for Cable-Tool Drilling Announced by Spang

Among new equipment manufactured by Spang & Co., Butler, Pa., for cable-tool drilling, are the three products here illustrated.

The Spang Safety drilling-in head and oil-saver (Fig. P-253) is designed to divert oil and gas out of the rig during the drilling-in operation. It consists of a head fitted with wiper shut-off rings, through which the cable tools or a small-size bailer may be passed with but minor leakage. A quick-acting gate valve is mounted below the head, above a diversion chamber to which the lead line is attached. An automatic-opening oil-saver is mounted above the head. An auxiliary top is provided to adapt the equipment to the use of the various types of automatic tubing-spiders for running tubing after the well has been drilled in.

Fig. P-253

Fig. T-260

The Spang-Ekin drivepipe head and driver (Fig. T-260) makes the driving of drillpipe in cable-tool-drilled wells possible without the need of auxiliary drive-clamps and saves the time ordinarily consumed in attaching them to the stem and their subsequent removal. In addition to the time saved in handling the removable clamps, the use of this equipment is said to be a safety measure for the drilling crew. Its solid construction assures a blow that strikes fairly without imposing angular stress.

By use of the Spang cement spray-gun, cement, or a mixture of cement and Aquagel, may be sprayed on the walls of dry caves. This holds the dry caves in place and prevents their caving, even if water rises over them. The complete assembly consists of a loading-chamber top (with a bail for attaching the gun to the sand-line) and a loading-door into which the mixed cement is poured.

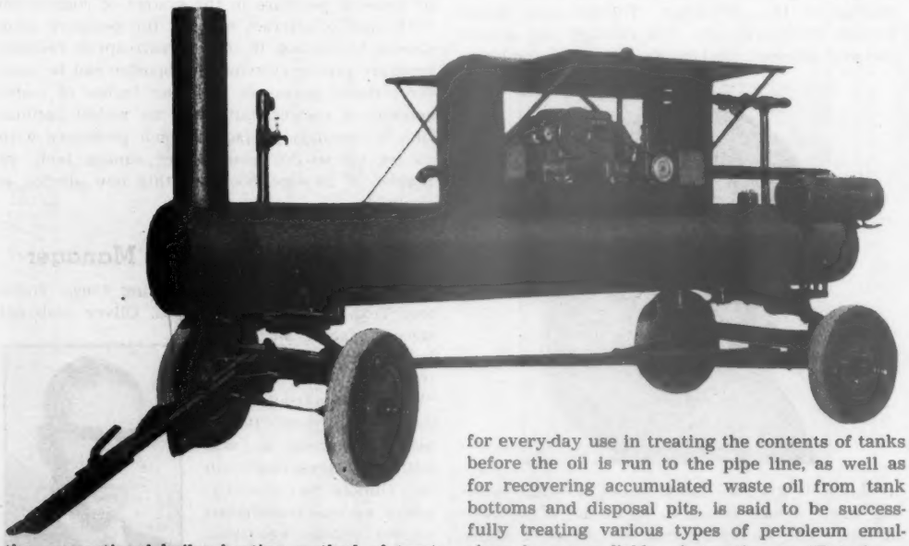
A trip-valve closes the lower end of the tubing, in order that the load of mixed cement may be held in place until it is ready to be released, after the cement has been carried down to the desired point in the well. The trip-valve chamber is shown in the open position in Fig. P-246.

Fig. P-246

PORTABLE OIL-TREATER IS INTRODUCED BY BRIDGEPORT

A new portable oil-treater being manufactured and distributed by the Bridgeport Machine Co., Wichita, Kans., is designed to take the place of the conventional boiler heating method of treating oil containing water emulsions, by combining and coordinating, in a handy and compact unit, the functions of heat, circulation and chemical treatment, augmented by vibration.

The unit, a general-purpose machine designed for every-day use in treating the contents of tanks before the oil is run to the pipe line, as well as for recovering accumulated waste oil from tank bottoms and disposal pits, is said to be successfully treating various types of petroleum emulsions in many fields. A treatise on "Petroleum Emulsion Treating" and complete description of the treater may be had from the company.

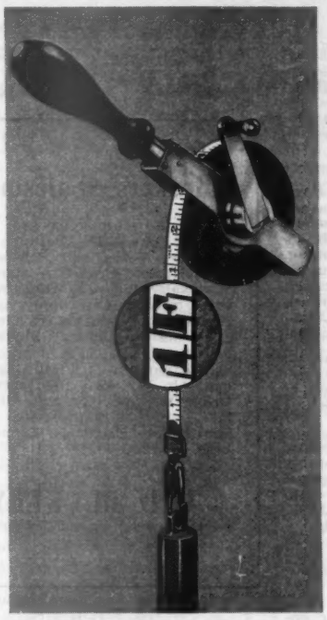


Northill Names Distributors

Southern distributors have been named for Covic Diesel engines by Ed Zuchelli, sales director of the Northill Co., who recently completed a sales trip throughout the territory. Thomas P. Hallock was named regional sales manager, with headquarters in Jacksonville, Fla. New distributors include Carson Machine & Supply Co., Oklahoma City, Okla.; Hart Machinery Co., Tampa, Fla.; W. E. Richardson Machine Co., Birmingham, Ala.

Latest Wyteface Tape Is Made Especially for Gauging Oil

The latest addition to the Wyteface line of tapes produced by Keuffel & Esser Co., Hoboken, N. J., and New York, is the Dallas Wyteface A.



It is designed specifically for gauging crude oil, where wear against the gauge-hatch, sandy residues and constant wiping are factors. Graduations, numbers and edges are raised black metal to stand up under the daily grind for a long and useful life.

Like all Wyteface tapes, this line has black-on-white graduations, making it easy to read, even in poor light. The crack-proof white surface contrasts sharply with crude oil to give a well-defined level mark. This extra visibility is referred to by the manufacturer as a great convenience in the field and a valuable safeguard against costly errors. There are other Wyteface tapes for every oil field requirement. A catalog is sent upon request.

The illustration shows the NW7722 Dallas Wyteface A line, one-half inch wide, 50 feet long, on a sturdy, stainless steel reel with long-folding, self-locking handle.

Lubricated Plug Valve Is Made for Very Low Temperatures

Development of a lubricated plug valve for extremely low temperatures is announced by Merco Nordstrom Valve Co. Recently installed in a plant for the manufacture of ethyl chloride where temperatures are as low as —150° F., this type of valve is said to be equally suitable for handling liquid air or for use in dewaxing plants and for other applications where extremely frigid temperatures are prevalent.

The principal effect which exposure to extreme cold conditions produces upon the engineering properties of steel is a decided tendency toward brittleness as evidenced by loss of impact resistance. Hence, the industrial processes involving operation at artificially produced subzero temperatures require the use of steels which show a minimum degree of susceptibility to this effect.

This valve can be used at any temperature up to —150° F., where minimum impact strengths of 15 foot-pounds Charpy are specified. There has been considerable interest in the behavior of materials, steel particularly, at the low temperatures involved. Selection of wrought steel for parts subject to low temperature is not particularly difficult, but there are many parts for low-temperature service, valve bodies for instance, that could be made from cast steel. The difficulty has been that of obtaining a cast steel that will meet impact requirements at very low temperatures.

The Nordstrom development permits the operation of a valve at pressures up to 600 pounds per square inch at subzero. The steel from which the bodies are cast meets a low-temperature impact specification of a minimum Charpy impact of 15 foot-pounds, using standard keyhole notch test specimens.

Here and There With Men Who Manufacture Equipment

Ray B. Hoover has been elected president of Shafer Bearing Corp., 35 East Wacker Drive, Chicago, manufacturer of roller bearings. Mr. Hoover was formerly vice president and general manager.

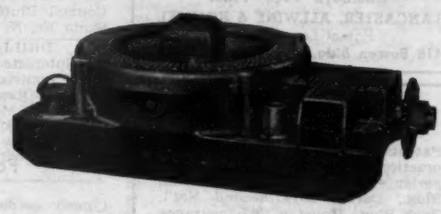
Century Electric Co. is represented in the Mid-Continent by Dean A. Dillon, 2140 East Nineteenth Street, Tulsa. The company manufactures electric motors and generators. Mr. Dillon's territory includes Oklahoma, southeast Kansas, southwest Missouri, Arkansas, and Louisiana.

Hal A. Lundberg, for several years representing United States Rubber Co. in Texas and Oklahoma, will represent the company in oil fields of Illinois also. The Illinois fields will be served directly by the company's branch in St. Louis, Mo., which is under the management of H. S. McPherson. Stocks of the company's oil-field products will be found in supply stores at Clay City, St. Elmo, Centralia, Salem, Fairfield, and other strategic points.

Ideal Rotary Machine Designed for Fast Deep-Well Drilling

An important development in deep-well drilling practice is the greatly increased speed of drill pipe rotation. Speeds of 250 to 300, even 350, r.p.m. are not unusual. For these high-speed requirements the Ideal HS-20½ rotary machine, offered by the National Supply Co., embodying new and valuable improvements in rotary machine construction, has been developed.

Spiral bevel gears are regular equipment on this type of machine, providing smoother and quieter operation as well as increased strength. Oil reservoirs are filled from one convenient lo-



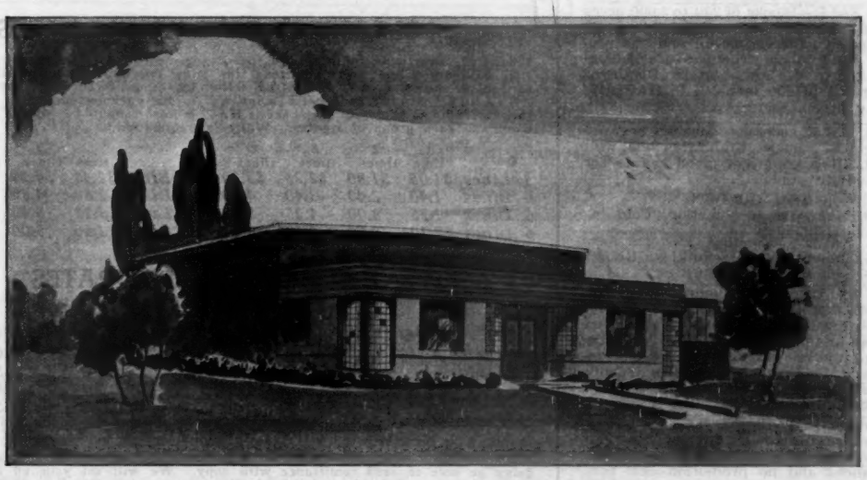
cation and oil circulation for the table bearings is automatically induced. The table-guard has a nonskid tread and is designed to permit a thorough flushing off of mud collected under the guard and on the side of the base. A double tongue-and-groove labyrinth between the table and base acts as a barrier to prevent the entrance of mud into the gear enclosure.

Lock pawls are fully protected, and the operating handles have a convenient push-pull action. The handles are protected and yet easily accessible from the side opposite the drawworks. A flat top base with a nonskid tread surface provides a firm footing. Built-in locks hold the drill-stem bushing and split table bushing in place. A rigid mounting for the pinion-shaft is provided by two bearing-housings, containing self-aligning roller bearings, bolted to the base.

The maximum rated rotation speed is 400 r.p.m. The rated drilling depth is 12,000 feet. An Ideal HS-20½ rotary machine was used by the Continental Oil Co. to complete its record-breaking 15,000-foot well at Wasco, Kern County, California.

SECURITY ENGINEERING BUILDS NEW PLANT IN HOUSTON

The Security Engineering Co., Whittier, Calif., has started construction of a division office, warehouse and manufacturing plant at 5525 Clinton Drive, Houston, Tex. The new all-steel unit will occupy a space 160 by 250 feet. Offices will be air-conditioned. The warehouse and manufacturing plant will contain modern equipment, with maximum light and ventilation in both buildings.



"Securaloy" pipe and accessories will be stocked and serviced at the new plant for the Oklahoma, Louisiana, Illinois and Gulf Coast areas. This plant will handle also an important part of export shipments of Security equipment through New Orleans and Gulf Coast ports.

H. F. Sutton, division manager in Houston, will be in charge of the new plant. L. G. Robinson will be his assistant. Hal Bentson works out of the Houston office, in charge of engineering.

CLASSIFIED ADVERTISING

Patent Attorneys

PATENTS — TRADE MARKS

All cases submitted given personal attention.

Form **"Evidence of Conception"** with instructions for use and **"Schedule of Government and Attorneys' Fees—FREE**

LANCASTER, ALLWINE & ROMMEL
Patent Law Offices
418 Bowen Bldg., Washington, D. C.

JACK A. SCHLEY
PATENT LAWYER

Patents obtained — infringement practice in all Courts—oil field experience. 1807-11 Tower Petroleum Bldg., Dallas. 2014 Second Nat'l. Bank Bldg., Houston. 707 Insurance Building, San Antonio. 433 Munsey Building, Washington, D. C. Address any of these offices.

Legal Blanks

SINCE 1908 Burkhart's legal forms—serving Mid-Cont. oil fields, including Ill., La. Mo. Ind. & Ky. Free catalog & samples. Burkhart Ptg. & Sta. Co., 115 So. Cinn., Tulsa, Okla.

Leases and Drilling Blocks

LEASES—East Texas, La., South Ark. 20 acres up, dollar acre up.—Owners—Address Attorney, Box 1122, Little Rock, Ark.

DRILLING deals wanted 50,000 acres Southern Illinois in and around production area. Elmer Gant, Anna, Illinois.

ILLINOIS 60,000 acres in and near production. Illinois Minerals Company, Cairo, Illinois.

SACRIFICE 40-acre Oil Lease, Chaves County, for only $10.00, full price. Guarantee title. P. O. Box 191, Clovis, N. Mex.

320 ACRES, Crane Co., Tex., Magnolia lease, cheap in fee. Address 415 Littlefield Building, Austin, Texas.

LEASES—ROYALTIES near Ordovician and Woodbine-Trinity sand wildcats. Quick plays for 50 to 1 chances. E. CROFT, PROCTOR, TEXAS.

5 ACRE Mineral Deed, Landowners Royalty under entire 80 acres of land leased to Gulf Oil Co. being N½ NW¼ sec. 30, twp. 14s, rge. 31e, full price only $32.50. Perpetual and full participating. Send your check. Guarantee delivery. P. O. Box 968, Hobbs, N. Mex.

FOR SALE—Blocks of 250 to 5,000 acres 5 to 10 year term oil and gas leases located on structures near oil and gas producing wells. Two structures are geologically approved. Low rentals. Depth of drilling 450 to 800 feet. W. P. HARLEY, Bowling Green, Kentucky.

FOR SALE, acreage covering proven gas field in eastern Utah. Has one well 2400 ft. High grade gas, good chance for Oil in lower sands.

TOM GOLDEN
413 Main, Grand Junction, Colo.

FOR SALE: 50-Section Eastern New Mexico Ranch. Oil possibilities. Robert Gray, O'Dell Hotel, Hot Springs, N. M.

FOR SALE: Nowata County, Okla., 18-26N. 16E. 80 acres, 7 wells, depth 740, sand 35 ft., production 8 bbls., water flood installed in immediate vicinity. Air pressure on adjacent property highly successful. Lease has great possibilities if only moderately improved. Price $10,000.00 cash. M. J. Regan, Coffeyville, Kansas.

ROTARY TOOLS
Will rent or furnish on interest basis Union Tool six inch rotary steam rig. Must be financed and no promotion deal considered.

BERRY OIL COMPANY
1435 NW 36th St.
Oklahoma City, Okla.

880 ACRES AVAILABLE
For leasing in S. E. Graham County, Kansas. Address Box J-828, The Oil and Gas Journal, Tulsa, Oklahoma.

Leases and Drilling Blocks

NEW MEXICO
State Oil and Gas Leases
Forty acres and multiples thereof at $6.00 to $30.00 per forty in the Hot Spots. Buy where the major companies own leases. Write for list. Twenty years in the business and not a complaint.
HARRY S. WRIGHT
New Mexico State Lessee, P. O. Box 166, Council Bluffs, Iowa, or P. O. Box 347, Santa Fe, N. M.

DRILLING DEAL WANTED
Am interested in securing acreage preferably Louisiana-Arkansas for immediate drilling. Operations can start in 30 days.
MEYER EISEMAN
919 Gravier Street
New Orleans, Louisiana

For Sale—Maps

UP-TO-DATE
County ownership and oilfield maps in TEXAS and NEW MEXICO. WILDCAT MAP of Texas and eastern N. M. published monthly, shows all wildcats drilling in relation to proven fields. Single copy $3.00. Subscription rates.
ZINGERY OIL MAP COMPANY
Fair Bldg. Fort Worth, Tex.

Oil Industry Printing

OIL FIELD LEGAL BLANKS
Leases, assignments, releases, township plat books, well records, etc. Request on your letterhead gets free catalog. Olds Press, 215 East Third St., Tulsa, Okla.

Incorporations

DELAWARE CHARTERS: Complete service $35. Submitted forms. Chas. G. Guyer, Inc., Wilmington, Delaware.

CHARTERS — Delaware best, quickest, cheapest, more liberal. Free forms Colonial Charter Co., Wilmington, Del.

Help Wanted

WE BUY names royalty owners receiving pipe line checks, also stockholders. Box 2603, Tulsa, Oklahoma.

Situations Wanted

DESIRE connection with company or individual developing oil property, operation or installation of natural gas plant as employee or partner. Graduate engineer, 20 years' operating experience, 4 years with state service Comm. Address Box J-832, The Oil and Gas Journal, Tulsa, Okla.

CORE ANALYST—Chemist—desires to contact oil company or individual considering establishing core analysis lab. Employed at present. Address Box J820, The Oil and Gas Journal, Tulsa, Oklahoma.

Situations Wanted

DESIRE connection as sales representative for manufacturer of industrial equipment for the oil industry. Well qualified by technical training and 12 years' experience as refinery superintendent and engineer to competently handle sales engineering work. Address Box J-824, The Oil and Gas Journal, Tulsa, Oklahoma.

REFINERY Superintendent and Engineer, thoroughly experienced in operation, maintenance and construction of modern refining operations including atmospheric, vacuum, pressure, combination, reforming, gas, poly, solvent lube and asphalt units. Considerable management background with successful record. Technically trained. Consider any location. Address Box J-825, The Oil and Gas Journal, Tulsa, Oklahoma.

CHEM. Engr. Age 24, Single. Exp. in drlg. and development in La. and Texas. Versatile fellow for any company. Best of refs. Address Box J-823, The Oil and Gas Journal, Tulsa, Oklahoma.

ACCOUNTANT and Tax man holding C.P.A. degree, desires position, preferably with oil company in Tulsa. Now engaged in public practice. 20 yrs. experience. Reliable refs. furnished. Address Box J-791, The Oil and Gas Journal, Tulsa, Okla.

GRAD. PETROLEUM Engineer 16 yrs.' experience as Drilling and Production Superintendent, repressuring, gas lift and transportation. Both cable tool and rotary drilling. Able, efficient and economic operation. Best of references including present employer. Address Box J-833, The Oil and Gas Journal, Tulsa, Oklahoma.

Connection with independent jobber or refiner sought by young man with background of ten years' executive experience in all phases of service station and bulk plant management. Capable of assuming active charge of entire marketing operation. Complete details of record gladly furnished on request. Address **Box J-831, The Oil and Gas Journal, Tulsa, Oklahoma.**

LADY TYPIST, 31 years of age, with practical knowledge of bookkeeping and 12 years' experience in general office and credit work in Tulsa, desires position elsewhere or with a possibility of transfer. Anything considered. Address Box J-835, The Oil and Gas Journal, Tulsa, Okla.

EXPERIENCED land, production man capable directing all operations; familiar Illinois-Indiana; available any area. A. G., 125 S. Sycamore St., Centralia, Ill.

Royalties

ANDREW J. BARRETT
The Philtower
Tulsa, Oklahoma.

Brokers—Salesmen

Sell in the most active area in the United States—The Permian Basin of West Texas and Southeastern New Mexico. From the standpoint of royalty investors this area has much to offer. Can supply you with choice non-producing royalties located on geophysical highs. Also drilling blocks, close in acreage to production, or wildcat leases. I maintain my own field men who cover this area for me. All offerings meet the requirements of the Security and Exchange Commission. Inquiries invited.

B. D. BUCKLEY
Paul Brown Bldg., St. Louis, Mo.

Producing and Non-Producing OIL ROYALTIES
Registered Dealers Only.
GRIMES ROYALTY CO.
Hunt Bldg. Tulsa, Okla.

PRODUCING OIL ROYALTIES
15 years of experience.
L. H. WITWER
703 Kennedy Bldg., Tulsa, Okla.

Survey Service

OIL FINDING DOWSING METHOD
My deductions a practical method which picks up vibratory reactions emanating from carbo-hydrates. Physico method finds oil, locates faults. Same method discovered great East Texas field also our Watson #2 first producer Wilmington, Calif. field. Employ a man that owns producing wells. I find oil if it exists or no charge. George Miller, 1548 Post, Torrance, California.

Special Services

OWNERS OF SMALL OKLA. PRODUCTION: Let me act as your agent to make production, social security and other reports, keep books or render other special service. Reasonable charge. References or bond furnished. Address Box J-834, The Oil and Gas Journal, Tulsa, Oklahoma.

Equipment Wanted

WANTED—Compressor, preferably with engine. Actual delivery 140,000 cu. ft. of free air per 24-hour day at 375#. State make, specifications, price and conditions. Oko Oil & Gas Co., Iola, Kansas.

Wanted to purchase for dismantling and moving to Alberta, Canada: A Dubbs or other suitable single or two-coil cracking unit complete with pumps, instruments, etc. capable of 500 to 1,000 barrels throughput daily, or will consider buying suitable pumps, vessels or instruments separately.
Quote location, price and full particulars to

LION OILS LIMITED
Calgary, Alberta

For Sale—Equipment

FOR SALE at Oklahoma City: 9⅝-in. OD 8 thread 40-lb. second hand API C seamless steel casing range 2. I. T. I. O. Company.

TRACTORS
Government crawler type Caterpillars, 5 ton $375, 10 ton $695. Slightly used. Perfect condition.
O. C. EVANS
Mt. Sterling, Ky.

FOR SALE at Oklahoma City: 1—13x14 Ajax enclosed type drilling engine, not roller bearing, Babbitted bearings with outboard bearing. I. T. I. O. Co.

CLASSIFIED ADVERTISING RATES

Classified advertising rates: First insertion, 35 cents a line; each additional insertion, 25 cents a line, PAYABLE IN ADVANCE. Six words usually make a line. Count as a word each one-letter word and each group of figures. White-space computed at regular line rate. Allow two extra lines for blind ads. Ads of less than three lines not accepted. No formal acknowledgement is made, and proofs cannot be shown in advance of publication.

	1 time	2 times	3 times	4 times		1 time	2 times	3 times	4 times
3 Lines	$1.05	$1.80	$2.25	$3.30	7 Lines	$2.45	$4.20	$5.95	$7.70
4 Lines	1.40	2.40	3.40	4.40	8 Lines	2.80	4.80	6.80	8.80
5 Lines	1.75	3.00	4.25	5.50	9 Lines	3.15	5.40	7.65	9.90
6 Lines	2.10	3.60	5.10	6.60	10 Lines	3.50	6.00	8.50	11.00

CLASSIFIED DISPLAY RATES

Classified Display is set with a border and may be used in one or two column sizes.

1 Inch	1 time	$5.00
1 Inch	13 times	4.50 per inch
1 Inch	26 times	4.00 per inch
1 Inch	52 times	3.50 per inch

This space may be contracted for over a period of one year from the date of the first insertion and is PAYABLE IN ADVANCE, MONTHLY.

We reserve the right to withhold all advertising of questionable character. To avoid delay be sure to send remittance with copy. We will set your ad in the smallest amount of space possible and refund all overpayments. One-time insertions will not be run until fully paid. Forms close MONDAY NOON before each issue date.

THE OIL AND GAS JOURNAL
TULSA, OKLA.

CLASSIFIED ADVERTISING

For Sale—Equipment **For Sale—Equipment** **For Sale—Equipment**

PIPE—STEEL STORAGE TANKS—REFINERY EQUIPMENT

75,000 ft.—2½" line pipe-T&C—5.75 lbs. 30,000 ft.—6" line pipe-T&C—24 lbs.
100,000 ft.—4" line pipe-T&C—10.79 lbs. 100,000 ft.—6" line pipe-T&C—19 lbs.
150—80,000 bbl. tanks, quoted cut down and loaded on car; or reerected on customers' grade any location
PIPE AND TANKS — CASH OR CREDIT
COMPLETE STOCK OF REFINERY EQUIPMENT — SEND US YOUR INQUIRIES

SONKEN-GALAMBA SUPPLY COMPANY

W. C. Berry or H. J. Galamba, Riverview at Second, Kansas City, Kansas
Robt. W. Duden, 2100 S. Union, Tulsa, Oklahoma

FOR SALE

20,000 feet 4" seamless drill pipe with tool joints to single. We have a complete line of casing, line pipe and drilling machinery. Also have racked in Kansas 25,000 feet 8" plain end line pipe suitable for high pressure gas or oil line. Wire, phone, or write to

Louisiana Iron & Supply Co.
Shreveport, Louisiana

FOR SALE
HEAVY STEAM ROTARY RIG

Including 3 125-250 Oil Well Boilers feed pumps, 3-KW generator, gas regulator, burners, stacks complete. 1—7¾x18 Wheland Power Pump driven by 14x12 Sgle. Cyl. R. B. Steam engine on skids. 1 A-3500 8" R. B. Unitized 4 speed Jack shaft Lucey draw works, new, and 12x12 Gumbo twin engine. 1—27" Lucey rotary table; 1 new Reagan Crown; 1—66" U.T.R.B. traveling block; new 10" Ideal hook, 1 E-6000 Lucey swivel; Steel tool house, and fittings for rigging up. Complete rig less drill pipe. $18,000.00 cash, at location. Also 5,000' 6⅝" extra good drill pipe 25.20#, 85c ft.

SEIBOLDT DRILLING CO.
Box 847, Cushing, Okla.
Telephone 1221, Cushing, or
2-1598 at Wichita Falls, Tex.

CLIMAX R-6-U—125 H. P. Engine, new pistons, rebored, Young Transmission—$1700.00. Butane $150 extra. Address 620 W. Second St., Tulsa, Okla.

FOR quick sale, a bargain in two Lufkin 6½" pumping units complete. Also other oil field equipment. P. C. Wade, P O. Box 1986, Houston, Texas. Telephone Hadley 6544.

FOR SALE—1 Model KS-6-DHK Cardwell Oilwell servicing winch unit, mounted on Mack Truck. Can be inspected O.C. garage. Operating condition now. I.T.I.O., Bartlesville, Oklahoma.

NEXT WEEK

We will publish our special Annual Number. This issue will review the activities of the entire oil industry during the year of 1938 and it will be an issue of immediate and lasting reference value to oil company executives, engineers, superintendents and key operating men.

Don't fail to be represented in this outstanding number if you have any of the following for sale:

Used Equipment,
Leases,
Royalties,
Production,
or Special Services.

The dead-line for receiving ads for this issue is January 23rd, so rush your ad to us without delay.

Classified Department

The Oil and Gas Journal

Tulsa, Oklahoma

For Sale—Equipment

FOR SALE. At our Oklahoma City Warehouse Model D48 Muskogee Iron Works long line well servicing unit powered by HXE Hercules engines mounted on No. 55 truck. I.T.I.O., Bartlesville, Oklahoma

25 K.W. and 40 K.W. Gas Engines, 220 volts, D.C. Two 100 K.W. Gas Engine-Generator Sets, 220 volts, D.C. 7x6 Ingersoll-Rand ER-1 Air compressor. Six-inch Oster Pipe Threading Machine. Also large stock of lathes, pipe machines, milling machines, etc. Send for our list.
Terms to suit.
CINCINNATI MACHINERY & SUPPLY CO.
28 West 2nd St. Cincinnati, Ohio.

Financing

CAPITAL SEEKERS—Put your project before 260 Key-Men. Cost trifling. Details free. AMSTER LEONARD, Fox Theater Building, Detroit, Michigan.

IMAGINE oil men doing long term financing through banks! Read "The Banks Loosen Up." Mimeographed bulletin $1.00. America's 72 leading underwriters who bought $800,000,000 securities 1938, $3.00. Insurance companies largest buyers whole issues stocks and bonds told in "The Money Market Offered by Insurance Companies" with list of 83 leaders $3.00. All three $6. John Morris, 1040 S. Paxon, Philadelphia.

OIL FINANCING proven acreage. Oil payments bought. Texas only. Address Box J-826, The Oil and Gas Journal, Tulsa, Oklahoma.

Mailing Lists

ROYALTY Lists. Unit Owners Lists. Stockholders Lists. By states. Oil Industry Mailing List Co., Tulsa Loan Bldg., Tulsa, Oklahoma.

Business Opportunities

Warehouse Space. Oil well supply business, bonded, act Manufacturer's agent,
Knox Warehouse Company
1302 Conti Street, Houston, Texas

ATTENTION MANUFACTURERS, or Manufacturers representatives — available now, a large, attractive, light and airy office with two windows in Chicago loop. Will rent with all services, including stenographic, and with or without furniture, close to all transportation. Phone or write The Oil and Gas Journal, 300 W. Adams Street, Chicago, Illinois.

ONE-HALF the royalties on 190 acres of land now under lease in the Forest City oil basin in Atchison Co., Mo. northwest Mo. for $2500.
B. F. CURRY, #3, Fairfax, Mo.

California Fields

(Continued from Page 81)

per day from 3,925 feet. Richfield Oil Corp. No. 16 Pacific Dock was good for 180 bbls. of 16.7 gravity oil per day from the Ranger zone with bottom of the hole at 2,885 feet. No. 94 of Union Pacific Railroad Co., completed in the Ford zone with bottom of the hole at 5,623 feet, but plugged back to 5,596 feet, was finished flowing 110 bbls. of 27.8 gravity oil, cutting 7 per cent.

Los Angeles Basin

Union Oil Co., in the Rosecrans field of Los Angeles basin, completed No. 29 Rosecrans, flowing 1,523 bbls. of 33.1 gravity oil and 2,150,000 cu. ft. of natural gas per day from the O'Dea zone with bottom of the hole at 7,765 feet. Barnsdall Oil Co. is listing its No. 10 Rosecrans in this field as a final completion doing 210 bbls. of 32.1 gravity oil cutting 25 per cent per day on a compressor from 6,168 feet. It was drilled down to 8,747 feet in search of a deeper zone, but was plugged back when this expected zone failed to materialize. In the Potrero field, Basin Oil Co. completed No. 3 flowing 211 bbls. of clean 46.5 gravity oil per day through a twenty-sixty-fourths inch bean from the upper zone with bottom of the hole at 3,686 feet. The well is producing from a 40-foot interval of oil sand near the bottom of the hole. Union Oil Co., Tide Water Associated Oil Co. and Standard Oil Co. are completing preparations to begin drilling new wells in the Aliso Canyon field located near the town of San Fernando in Los Angeles County and actual drilling should get under way shortly.

Coastal Area

Tide Water Associated Oil Co. recompleted No. 81 Lloyd in the Ventura Avenue field a few days ago, and this well was returned to production flowing 1,620 bbls. of clean 30.8 gravity oil and 2,100,000 feet of natural gas per day from 8,980 feet. This well, a former producing well at 7,600 feet, was returned to production flowing through a forty-sixty-fourths inch bean and showed a tubing pressure of 375 pounds and a casing pressure of 980 pounds. In the Sespe district of Ventura County, St. Louis Oil Co. has completed No. 1 Williamson pumping 80 bbls. of 25.4 gravity oil per day from 1,994 feet. In the San Miguelito field of Ventura County, Chanslor Canfield Midway Oil Co. completed No. 6-A Hobson in Section 15-3-24, pumping 195 bbls. of 21.9 gravity oil cutting 50 per cent from 5,426 feet. Ridge Oil Co. abandoned No. 1 Fox in the Padre Canyon field of Ventura County due to failure to find the pay above 8,000 feet, at which point drilling operations were concluded. Up in the Santa Barbara Mesa field Trans-Oceanic Oil Co. has hit the pay in No. 2 Mdivani at 1,445 feet at a point about 75 feet higher than the same zone was logged in well No. 1 and the outlook is therefore favorable for production.

San Joaquin Basin

Hall-Baker Co. got a gas well in the McKittrick field of Kern County when No. 1 Williams was given a production test after the hole had been plugged back from 1,362 feet to 1,341 feet. The well came in flowing 1,000,000 cu. ft. of gas accompanied by a spray of salt water, mud and a small amount of oil.

In the Midway-Sunset field, the Texas Co. recompleted No. 102 in Section 36-31-22 pumping 35 bbls. of 16.3 gravity oil cutting 22 per cent. It was finished several weeks ago at 1,070 feet and deepened to 1,150 feet and finished with 385 feet of 6⅝-inch liner, including 232 feet of perforated and 1,126 feet of 3-inch tubing.

In the Buttonwillow field of Kern County, California Lands, Inc., reached a depth of 11,151 feet in No. 1 Salisbury in Section 7-29-24, but has not yet found the pay. In the Lost Hills district the same company is rigging up rotary drilling equipment on No. 2 Occidental in Section 24-26-20 and present plans call for immediate drilling. No. 1 Occidental was abandoned at 7,343 feet due to stuck drill pipe during which time the well blew out and flowed salt water and natural gas. Upper Temblor was logged at 5,937-85 feet and oil sand was cored at 6,014-75 feet, which was probably also Temblor.

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